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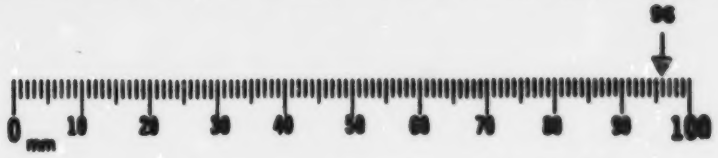
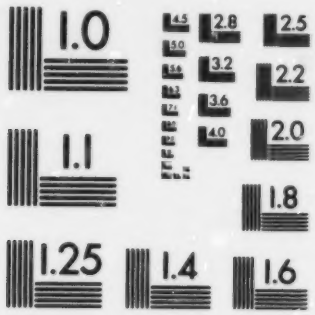


PM-1 3½"x4" PHOTOGRAPHIC MICROCOPY TARGET
NBS 1010a ANSI/ISO #2 EQUIVALENT



PRECISION[SM] RESOLUTION TARGETS

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NATIONAL MICROGRAPHICS ASSOCIATION

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NEW ZEALAND

TELECOMMUNICATIONS

BRIEFING PAPER

PART I

Communications Industry

PART II

Deregulation of the Radio Frequency Spectrum

90-05424/

PART I

SELECTED MARKET SUMMARY

NEW ZEALAND

1989/90

COMMUNICATIONS INDUSTRY

Canadian High Commission
Commercial Division
P.O. Box 12-049
Thorndon, Wellington
NEW ZEALAND

Telephone: 739-577
Telex: NZ 3577
Fax: (04)712-082

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INTRODUCTION

New Zealand, situated in the Southwest Pacific is a westernised, sophisticated country with a high per capita income and a population of 3.3 million. The majority of inhabitants are urban dwellers and of European extraction.

Almost one third of the population lives in the greater Auckland area (1 Million people). Auckland is located in the northern part of the North Island and is New Zealand's major international gateway.

Wellington is the capital and a major business city for government and corporate head offices. It is situated at the southern tip of the North Island and is strategically located in the centre of the country. The population of the greater Wellington area is 350,000.

Christchurch is the largest city of the South Island and is a second gateway for international air traffic to and from S.E Asia and North America.

Prior to the present Government coming to power (July 1984), the New Zealand economy was characterized by regulations, controls, tariff and non-tariff barriers. However, these have been progressively dismantled and the economy is now substantially liberalized.

Most notably affected are the Communications, Broadcasting, Telecommunications and Information Technology industries. Today New Zealand has the most deregulated communications industry in the world. Unlike other countries, New Zealand does not have a regulatory body governing industry practices. It currently relies on the "Fair Trading" and "Commerce" Acts to ensure competitive practices across all industry sectors.

The latest development is a government proposal to auction the airways, thus opening up ownership of the radio spectrum to private enterprise. This has met with mixed public reaction and has yet to be finalised. (See also Appendix 5 - page 21.)

THE MARKET

All figures supplied courtesy of Compass Hoby Ltd.

TELECOMMUNICATIONS
(all millions $NZ)
($1NZ = $0.700 CDN)

Product Imports	Cdn % Share of Imports 1988	Cdn Share $M 1988	Market $M	Total $M
Consumer Premises Equipment	2.3	2.55	181.5	110.9
Computer Com	0.8	0.88	120.4	110.0
Mobile	2.6	1.78	83.0	68.5
Broadcast	4.0	2.83	71.8	70.75
Space	1.15	0.05	3.3	3.3
Telecoms	3.3	2.27	81.5	68.8
TOTAL CANADIAN MARKET SHARE		$10.36		
TOTAL 1988 MARKET		$541.5		

Canada is considered as a good prospective source of supply; however, exporters need to treat the market as separate from Australia and also raise the general awareness of their products here.

Support is a key issue in this market, and a visible local presence is considered essential either through an operating subsidiary company, or local agent.

Active promotion is very important, especially if you use a local agent. Although their knowledge of the market is good, they are selling a range of products, and will naturally promote, most vigorously, the ones that are given the most support from parent company(s). The techniques used in this process are identical to Canadian techniques.

Finally, although quality is important, New Zealanders tend to be price sensitive. This is most important in government contracts, but also applies to industrial contracts.

GROWTH EXPECTATIONS

The deregulation of the broadcasting and telecommunications market in New Zealand, and the removal of the state-owned Telecom Corporation's monopoly in many areas will contribute to immediate growth in this area. Demand, particularly in the consumer products area, has been considerably stimulated as a result of these policies, and the market is by no means mature yet. For further information on deregulation, see the report titled "Telecommunications - Deregulation in New Zealand", attached in Appendix I.

Our forecasts for growth rates in this sector are provided below.

Telecommunications Sector - Average Annual Growth Rates

1988-1989	1990-1991	1991-1992
22.5%	32.0%	31.8%

Almost all individual sectors, with the exception of Broadcast/Multimedia Equipment, are expected to experience growth rates above 20 per cent, a shown below.

Consumer Premises Equipment - Average Growth

1988-1989	1990-1991	1991-1992
21.0%	19.6%	24.6

Computer Communications Equipment - Average Annual Growth

1988-1989	1990-1991	1991-1992
39.1%	30.5%	29.5%

Mobile Equipment - Average Annual Growth

1988-1989	1990-1991	1991-1992
24.0%	21.3%	23.4%

Broadcast/Multimedia Equipment - Average Annual Growth

1988-1989	1990-1991	1991-1992
10.8%	13.3%	13.4%

Space Communications Equipment - Average Annual Growth

1988-1989	1990-1991	1991-1992
17.5%	50.0%	51.25%

Telecommunications Equipment - Average Annual Growth

1988-1989	1990-1991	1991-1992
19.2%	21.3%	23.4%

IMPORT GROWTH TRENDS

Currently the majority of the telecommunications equipment market is accounted for by imports. In some areas domestic manufacture is expected to encroach on imports over the coming five years. However, generally imports are expected to retain most of their share of the market, if not increase it. The following tables provide forecasts for the changing proportions of the market accounted for by imports as opposed to domestically-scoured products.

Consumer Premises Equipment

	Domestic	Imported
1988	38.9%	61.1%
1990	22.8%	77.2%
1992	22.9%	77.1%

Computer Premises Equipment

	Domestic	Imported
1988	8.6%	91.4%
1990	5.7%	94.3%
1992	4.9%	95.1%

Mobile Equipment

	Domestic	Imported
1988	17.5%	82.5%
1990	14.2%	85.8%
1992	14.3%	85.7%

Broadcast/Multimedia Equipment

	Domestic	Imported
1988	1.5%	98.5%
1990	1.5%	98.5%
1992	1.5%	98.5%

Space Communications Equipment

	Domestic	Imported
1988	1.0%	99.0%
1990	1.0%	99.0%
1992	2.0%	98.0%

Computer Telecommunications Equipment

	Domestic	Imported
1988	15.6%	84.4%
1990	13.1%	86.9%
1992	13.1%	86.9%

MARKET SHARE TRENDS

Almost all industry representatives considered that Canada's market share would be likely to decrease in all sectors as a result of aggressive marketing by Australia, the United Kingdom, France and the USA. However, the presence of both Mitel and Northern Telecom here is of particular benefit in keeping Canada's profile high.

The forecast provided below reflect industry opinions only, and could easily be altered as a result of aggressive marketing strategies by Canadian exporters.

Telecommunications Sector - Anticipated Changes in Canadian Market Share to 1992

Consumer Premises Equipment	- 19.7%
Computer Communications Equipment	- 5.0%
Mobile Equipment	- 12.5%
Broadcast/Multimedia Equipment	- 0.0%
Space Communications Equipment	+ 15.0%
Telecommunications Equipment	- 18.0%

Reasons cited for these relative decreases were varied, but almost all related to lack of strong marketing efforts by Canadian exporters, and also, with notable exceptions, an inability to address themselves to the New Zealand market in a serious and committed way.

It should also be noted here that, while the telecommunications market is growing at a considerable rate, industry participants are, in the words of one respondent, "expecting a period of chaos as the industry sorts itself out after deregulation. There will be many new entrants in the market, some will go, others will stay, but everyone is expecting a two year period of increasing fragmentation before things settle down".

This, therefore, makes forecasting growth rates and changes in relative market shares somewhat difficult. However, given the current level of marketing activity by Canadian manufacturers, and on the assumption that this does not change in the future, Canadian market shares are expected to decrease in proportion to the market growth.

REF: 85-17
APPENDIX 1

Canadian High Commission
P.O. Box 12-049
Thorndon, Wellington
NEW ZEALAND

November 1989

TELECOMMUNICATIONS DEREGULATION IN NEW ZEALAND

INTRODUCTION

For some time the telecommunications industries throughout the world have looked towards liberalization and eventually privatization. In 1986 the New Zealand Labour government announced that the New Zealand Post Office was to be split into three separate state owned corporations being; NZ Post, Postbank (formerly the Post Office Savings Bank) and Telecom. The telecom part officially became, "Telecom Corporation of NZ Ltd", on April 1st 1987. A number of minor changes occurred at that time, but essentially it remained a monopoly supplier of telecommunications services and to the consumers no changes were apparent. Then the government announced that it was planning to have Telecom's monopoly steadily dismantled in a number of deregulatory stages. The Chief Executive Officer, Mr Pat McInernie, announced he was to retire and Dr Peter Troughton (formerly of British Telecom, in the UK) was subsequently appointed as the new CEO of Telecom.

THE RESTRUCTURING OF TELECOM CORPORATION

In May 1988 Dr Troughton announced restructuring plans for a new competitive organization. The restructuring proposal followed a familiarization tour of Telecom districts undertaken by Dr Troughton following his arrival in New Zealand in early March. "The tour revealed some very substantial weaknesses in the way Telecom is organised and managed, many of which are hangovers from the old Post Office," Dr Troughton said. "I believe we must very quickly change the way we do things if we are to exploit the abundant new business opportunities created by full deregulation of the telecommunications industry."

The new organization consists of an (umbrella) holding company (Telecom Corporation of New Zealand Ltd) and five subsidiary companies. The holding company will replace the Head Office and will be responsible for central planning, technical specifications and some central procurement and supply (ie; selection of preferred suppliers), and will consist of approximately 200 staff.

The provision of telephone services will be the responsibility of the four subsidiary companies who will be divided up as follows (according to regions):

Telecom Auckland:	Auckland/Whangarei
Telecom Midlands:	Hamilton/Rotorua/Tauranga/Bay of Plenty/ New Plymouth/Palmerston North/Napier/Masterton
Telecom Wellington:	Wellington/Kapiti
Telecom South:	All of the South Island

A fifth company will handle "Inland Tolls & International Services" interconnecting with the regional subsidiaries only at major cities. This company will provide the long line trunk connections and microwave systems to link these centres. Other smaller subsidiary companies will be established to provide a range of specific Telecom products (on a nationwide basis), and would trade independently with other Telecom subsidiaries. Subsidiary companies in this group will include: Customer Products Distribution, Mobile Communications, Directories, Data/Electronic Mail, Telecommunications Systems Support Centre (a subsidiary already in existence), Telepaging and Equipment repairs.

TIMETABLE FOR DEREGULATION

In a statement to the press (16 June 1988), the then Minister of State Owned Enterprises, Hon Richard Prebble (now Stan Rodger), announced the timetable for the implementation of telecommunications deregulation in New Zealand:

1 April 1987 - Corporatisation of the NZ Post Office into -- Telecom Corporation of NZ Ltd, NZ Post, and Postbank, operating on "State Owned Enterprise" principles.

1 Oct 1987 - Residential wiring and telex equipment deregulated under the enactment of the "Telecommunications Act - 1987".

1 May 1988 - Deregulation of: Commercial premises wiring
Telephone Instruments

1 April 1989 - Further deregulation of: PABX's
Packet network
Telex network
Telephone network (local lines)

1 July 1989 - Deregulation of: Telephone network (long distance trunks)
Mobile telephone network
Paging network

THE NEW MARKET

The telecommunications market will for some time be dominated by Telecom even after deregulation, because much of the network, particularly at the local level, has natural monopoly characteristics, and competitors are only likely to duplicate small sections of it. Accordingly, most new entrants in the telecommunications market will be providing inter-connect equipment and thus will necessarily need to connect into the Telecom network. This means Telecom's competitors will be heavily dependent on it for facilities and services, giving Telecom a considerable competitive edge.

Telecom has stated (in a letter to the Minister) that it will provide interconnection to facilities on fair terms and conditions. The corporation must also adhere to the provisions laid out in the "Commerce Act - 1986", which was enacted to prevent anti-competitive practices. However New Zealand, currently has no regulatory body to police these activities. The minister hopes the Commerce Act will prove to be adequate in the task of ensuring workable and effective competition in telecommunications.

ALTERNATIVE NETWORKS

Prior to deciding to deregulate the network the government had commissioned "Touche Ross and Co" to conduct a survey on the "Network Services Market" in New Zealand. This report was released on the 15th of February 1988. Touche Ross identified the following corporations as best placed to offer telecommunications services in competition to Telecom:

New Zealand Railways Corporation
Electricorp
Broadcasting Corporation of New Zealand

The Railways Corporation has already indicated that they would be interested in a joint ventures, with private consortiums, to provide telecommunications services, in competition to Telecom.

Broadcast Communications Ltd (BCL was formerly the engineering divisions of Radio and Television New Zealand) have commissioned Bell Canada International to compile a "Business Plan" recommending suitable competitive approaches to the new market.

INTERCONNECTION STANDARDS

In order to ensure technical compatibility Telecom has set "Permit to connect" (PTC) standards, which are available from Telecom Corporation. These standards are based upon CCITT standards and BT standards, although it is not correct to assume that if equipment meets BT approval then it would necessarily be accepted in New Zealand. (See also Appendix 2.)

Testing of their standards is done at the "Department of Scientific and Industrial Research" (DSIR) and requires submission of 20 individual samples of the product. For telephone handsets, this full PTC test will cost the company seeking a "Telepermit", $3600.00 NZ (approximately $2700 CDN). However, the DSIR offers a trial PTC test, where 2 initial samples are submitted and tested, at a cost of $940.00 (approximately $710 CDN). Should the company seeking a "Telepermit" subsequently decide to proceed with the "full PTC" test, some rebate of this fee is available. As yet, there is no fee set for the testing of PABX's.

Because of the competitive environment in this sector, this procedure has been established to allow suppliers, not dealing exclusively with Telecom, to enter the market.

Alternatively, testing can be carried out by the Telecom Corporation NZ Ltd, with the supplier submitting 20 samples of the product, without having to pay for the test. This arrangement is only available to Telecom's approved suppliers who wish to market their product exclusively through Telecom.

PERMIT TO CONNECT DOCUMENTS

The documents outlining the interconnection standards can be obtained from:

Mr Doug Burrus
Telecom Corporation of NZ Ltd
Access Standards Section
P O Box 898
WELLINGTON/NEW ZEALAND
PH: (64-4) 749-778 FAX: (64-4) 728-897

ENTERING THE MARKET

Where previously suppliers had marketed only to the procurement section of the former Telecoms Corporation, marketing of telephone units, interconnect devices, and PABX's are now based on different techniques.

Interconnect devices and telephone instruments can be marketed two ways. One option is to become a preferred supplier to Telecom. This can be achieved by a successful "Request for Proposal" being accepted by the Telecom holding company. Once deemed a preferred supplier, the supplier must then convince the Telecom regional subsidiaries, which will be purchasing through the holding company,the supplier's product is the best product for the specific regional market. Thus, marketing has now become a two stage process.

Alternatively, the supplier could obtain a "Telepermit" for it's product, independently of Telecom, and retail through a local agent or company subsidiary. Owing to the size of the New Zealand market, unless a supplier is already based in NZ or intends to have sales in other product lines, the cost of obtaining a "Telepermit" and setting up a separate distribution company is normally too great. Under these circumstances it is best to engage a local agent to market and distribute the product (of which there are a number interested in canadian products). Local agents need active marketing support from suppliers, which would be achieved in much the same manner as for a subsidiary company.

The approach to marketing major switches, systems, and PABX's will be slightly different to interconnect devices due to the narrower spectrum of buyers and the higher revenues involved. Once again the Telecom preferred buyer method is recommended, however, the alternative of marketing independently now becomes a more attractive option.

TRENDS

The business community has experienced an increasingly growing demand for services (eg: in data communications). New Zealand, despite a deceptively small population base, has a very high demand for data technology.

The data communications market, which has been very advanced for many years, is expected to dramatically grow with the introduction of fibre optic, satellite, and microwave based competitive network systems, and thus presents extensive opportunities for canadian input.

Similarly, other industries not traditionally involved with the Telecommunications industry are experiencing the waves of deregulation. These industries (Broadcasting, Electricity and Railways), now free to pursue other activities and are currently evaluating the new opportunities.

For further information on exporting to New Zealand contact:

Ms Jessie Hislop/Mr Nigel Godfrey
Asia Pacific South Trade Division (PST)

OR

Mr Jim Kerr
Information Technology and Electronics Divsn (TDE)
External Affairs and International Trade Canada
Lester B Pearson Building
Sussex Drive
Ottawa
ONTARIO K1A 0G2

Access Standards Section
Corporate Policy Department
Telecom Corporate Office
WELLINGTON

ISSUE 1: NOVEMBER 1989

TELEPERMIT - WHAT'S IT ALL ABOUT?

DEAR TELECOM CUSTOMER

Deregulation of the Telecommunications industry in New Zealand has seen you all bombarded changes.

These changes have generally been beneficial, with new products and services across the boa However, in the new highly competitive telecommunications market, you all need to be aware th deregulation gives you choice, it also gives you responsibilities.

As a customer, you not only need to be aware of your options, but also of your rights and obliga In particular, you need to know about the role of Telecom's Permit to Connect (PTC) or "Telepe Specifications and what the "Telepermit" label on a product really means.

BACKGROUND

It is not commonly known that Telecom's national telecommunications standards must comply w international treaty obligations. Under these, the New Zealand Government is expected to ensu overseas calls into or out of this country comply with CCITT Recommendations. (The CCITT is t international standards body which deals with telecommunications standards). For this reason, designs its telephone network to conform with these CCITT Recommendations. These same Recommendations also form the basis of Telecom's PTC Specifications, which set the requirem the grant of "Telepermits". Amongst other things, they deal with the various parameters which overall transmission quality. After all, there are always at least two people involved in any teleph and both want to be able to hear one another. If one has a suspect telephone, it might be the o suffers the hearing problem!

Section 6 (1) of the Telecommunications Act 1987 says that "No person shall, without the agree the network operator, connect any additional line, apparatus, or equipment to any part of a netw any line, apparatus, or equipment connected to any part of a network owned by that operator". means for Telecom customers is that all telephones and other terminal equipment (usually refer "Customer Premises Equipment, or "CPE") must have a Telepermit. This is Telecom's register name for a "Permit to Connect", which is granted to that equipment which has been shown to c the various technical requirements published by Telecom. Such equipment thus has our forma agreement to its connection to our network under the terms of Section 6 of the Act.

Those found ignoring the law and connecting non-Telepermit equipment to the network will be disconnect it immediately. If such equipment is not disconnected, Telecom can legally withdra service from the lines concerned.

Another provision of the Act covers any person who might aid, abet or encourage someone els connect an illegal device to the network. We interpret this provision to cover the wording of ma brochures and advertising by suppliers, as well as any advice given by their sales staff.

THE AIMS OF THE TELEPERMIT SYSTEM

The main aims of the Telepermit system are to protect the integrity of the Telecom network and to ensure the safety of the network and any staff who may be called upon to work on it. We have found also that the PTC Specifications we produce are invaluable to manufacturers, importers, and suppliers as basic technical reference documents.

From your point of view, as a customer, you do not need to know about all the detailed technical implications of these PTC Specifications, you only need to look to see if a product has a Telepermit.

However, you should be aware that the Telepermit means only that samples of the product have passed electrical safety tests and that the design is compatible with the Telecom network. It does NOT indicate Telecom endorsement of the product nor the quality of any individual item of equipment.

With expensive and complex equipment, like PABX's and Key Telephone Systems, a Telepermit not only means they've been tested for compatibility and safety on the Telecom network market, but also that they should work properly when connected to the Telecom network.

However, be careful if you are thinking of "mixing and matching" telecommunications products. It is not always certain that one product will work properly with others, even if they do all have Telepermits. The Telepermit ensures that the product complies with Telecom network requirements, but does not cover all possibilities when it comes to connecting the various items together. As a general principle, you should always check that combinations of equipment from different suppliers will work correctly before you sign the cheques.

While the Telepermit help to you to make a buying decision, you must not regard it as a warranty or endorsement of a product by Telecom. Product quality and warranties are matters to be settled between the buyer and seller of the item concerned.

WHAT EQUIPMENT HAS A TELEPERMIT?

When the Telepermit system replaced the old Post Office Type Approval System, Telecom made a deliberate effort to ensure that the green Telepermit logo was distinctive and easily recognised. There was extensive publicity about its introduction and the aim was to avoid any confusion with approval labels issued by overseas countries.

There are now around 640 items of equipment with Telepermit, as shown on the attached list. Most of these are supplied by companies other than Telecom. In addition, there is a wide variety of modems, fax machines and answering machines which have been granted the earlier Type Approvals.

With such a wide range to choose from, if you are offered telecommunications equipment and it doesn't have either a Telepermit label or a New Zealand Type Approval label on it, you can be sure it hasn't been approved for use on the Telecom network.

As well as telephones, all PABX's and Key Telephone Systems, answering machines, telephone sockets, fax machines and any other customer premises equipment must have a Telepermit if they are going to be connected to the Telecom network. The only exceptions are the earlier equipment referred to above which has been granted a Type Approval and some of the new PABX and Key Telephone Systems. Many of the latter are now in the Telepermit "pipeline", but have so far been granted only a Limited Permit. You might be invited to purchase one of these and, if so, you will be asked to take part in an official trial set up in conjunction with Telecom to confirm that the system meets the supplier's expectations.

MAKE SURE YOU ARE WELL INFORMED BEFORE YOU BUY

We all welcome competition, but we can all do without competitors who don't follow the rules, and end up with their customers paying more further down the line.

With the ever-increasing range of telecommunications equipment and services available, and expanding choice of network systems to connect to, you should seek competent advice. This is where TUANZ is helping you to get the right information and they can often suggest suitable independent advisors to solve any problems.

PITFALLS AND SAFEGUARDS

The old saying, "cheapest is never the best" applies to telecommunications equipment more than ever before.

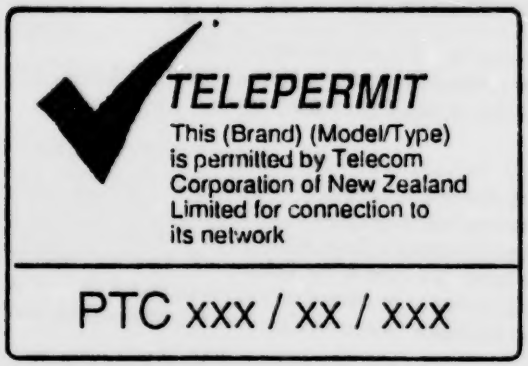
Competition, while giving the customers a wider choice and lower prices, doesn't automatically mean a better deal.

When confronted with advertising "hype" or persuasive salespeople, you need to have your wits about you, and be aware of your obligations.

Some equipment, manufactured overseas to overseas standards has been offered for sale here with neither Telepermit nor Type Approval. Telecommunications networks all over the world differ significantly in design, so such equipment is unlikely to be fully compatible with the Telecom network. This can result in customers purchasing telecommunications equipment they can't use.

Another point to watch is after sales servicing. Make sure that any complex high technology product has some service back-up. A $50 "throw-away" phone might be a practicable proposition, but "throw-away" PABX systems at several thousand dollars each are another story!

JUST REMEMBER, THE TELEPERMIT LABEL ALLOWS YOU TO PICK THE "KNOWN" FROM THE "UNKNOWN" AND YOU CAN CONNECT ANYTHING WITH A TELEPERMIT WITHOUT BREAKING THE LAW!



THE CURRENT RANGE OF PRODUCTS MEETING TELECOM TELEPERMIT REQUIREMENTS

Telecom has published a number of Specifications in the PTC series. These cover the network interfaces and the technical requirements of the various classes of products concerned.

Those products which have been granted a Telepermit will bear a label with the familiar green tick. This label will show the Telepermit number allocated to the particular product and the marketing name of that product. This means that you can check the validity of the label by comparing it with the product name on the packaging and sales brochures if you have any suspicions.

The main product PTC Specification number is shown as the first part of the Telepermit number. These numbers are also shown in the following list which indicates the present status of the deregulated customer premises equipment market in this Country:-

PTC No. Series	Type of Product	No. of types available with Telepermit	
		Full Permit	Limited Permit
101	Power supplies	21	
201	Telex terminal equipment	6	
202	Standard Telephones	93	
203	Telephone Sockets, etc	16	plus variants
204	3-pair cable	3	
205	Line Isolator Units	9	
206	Cordless Telephones	5	
207	PABX and Key Systems	35	60
207	System Dependent Telephones and terminals	80	31
208	Telephone Headsets	9	
210	Auxiliary Terminal Items	7	
211	Fax machines, modems, etc	94	plus 10 used only on leased lines
212	Answering Machines	32	
213	Pay Telephones	3	
216	Teleconferencing Equipment	5	
217	Bandwidth Management Equipment	7	
251	Telepaging Terminals	27	
252	Cellular Telephones	35	plus variants

The above list shows the position in November 1989.

For those interested in being advised of the full details of product names,Telepermit numbers and the official PTC holders, Telecom publishes the "PTC Register" at two-monthly intervals. This is available on annual subscription from Access Standards Section at a fee of $25 ($20 for those who also subscribe to the Access Standards Newsletter).

Copies of the various PTC Specifications, price lists and other information are also available from Access Standards. Any correspondence should be addressed to the address shown on page 1.

Telephone enquiries may be made to (04) 823 333.

For those with fax facilities, the fax number is (04) 851 702.

APPENDIX 3 - NOTE ON IMPORTERS

In order to identify opportunities in New Zealand for Canadian exporters, the Commercial Division of the Canadian High Commission conducted a survey of Communications equipment importers.

Information on companies who have expressed an interest in importing Communication products from Canada are kept on the Canadian High Commission's local WIN database. Information is similar to that collected from Canadian companies registered on WIN Export. Importing companies were asked to identify the industrial sectors in which they concentrate and details of any current representation of Canadian companies. They were also asked to name specific products of interest. The lists, are updated regularly.

The High Commission can recommend suitable companies to represent your business. However, the choice and final outcome will rest with the importer and the exporter. (Should financial information be required a credit report can be obtained for approx $80.00-90.00 CAD and you will be billed through External Affairs and International Trade Canada.) To get the best service from appointed local representation, exporters are urged to maintain regular contact with the market through their agents. Marketing advice and support should be proved to local representatives in New Zealand just as head office would support a domestic branch office.

For company representatives travelling from Canada to the Pacific rim, Canadian Airlines International flies direct from Vancouver and Toronto to Auckland twice a week. Air New Zealand flies from Vancouver weekly and many other carriers also offer service to New Zealand from North America.

Further information on Communications, Electrical/Electronics and Computer/Data sectors can be obtained from:

Commercial Officer
Canadian High Commission
P.O. Box 12-049
Thorndon, Wellington
NEW ZEALAND

Telephone: 739-577
Telex: NZ 3577
Fax: (04) 712-082

TCNZ FACES COMPETITION

Dr Peter Troughton joined the Telecom Corporation of New Zealand Ltd last year as Managing Director and Chief Executive Officer with the responsibility for changing the corporation from a government department to a commercial business in a deregulated marketplace. During a recent visit to Australia, Dr Troughton agreed to an interview with *International Communications Digest* Editor, Liz Fell, who asked him first to outline his experience before arriving in New Zealand.

Troughton: I've always worked in either communications or computing, those sorts of disciplines. I started as an apprentice at the age of 15 and, via working for Plessey and for the British Post Office, I got scholarships to the university where I got a first class honours degree and then a Ph.D. in engineering. I remained in engineering research and development until the mid 1970s, essentially in high-tech research mainly associated with computing developments like microprocessors. I transferred to general management in 1975 where I have worked in areas that essentially involved restructuring companies in the high technology sector. I did that within British Telecom and then for a merchant bank.

Did you view the TCNZ job as drawing on both the engineering and management strands of your experience?

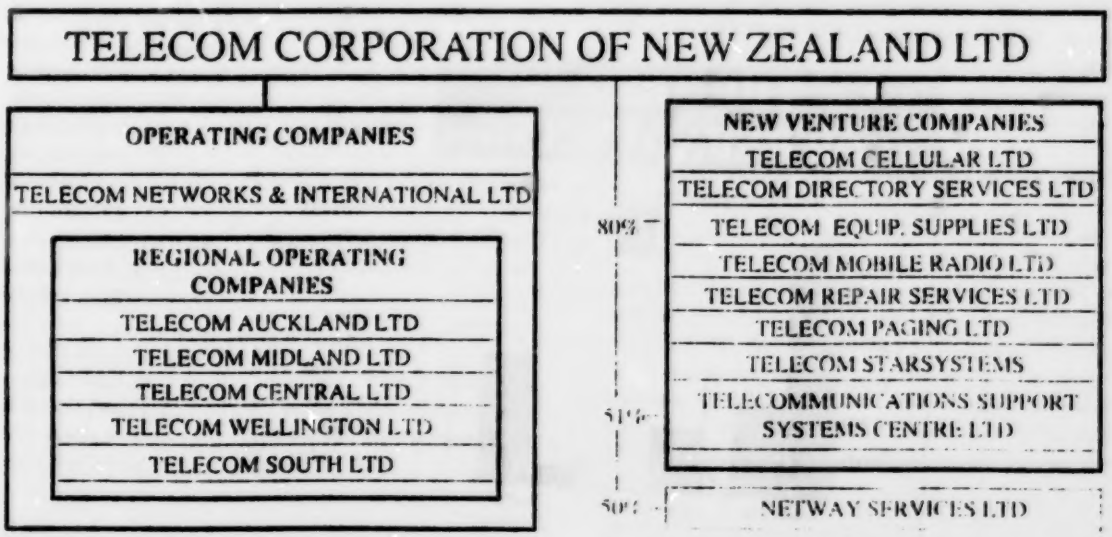
Basically that job needed straight restructuring. The Telecom Corp of New Zealand was very much a government department until 1987 when the government decided to create it as a stand-alone, commercially functioning viable business as the first stage in privatising it.

Why did you decide to work as a consultant first before actually taking up the position of Chief Executive Officer?

That's part of sorting out a company that has management problems. You must start at the bottom to find out how the company functions at the grass-roots level: what's right with it, what's wrong with it, what the general quality of management is, what the general attitudes are, what the quality of the people is like. When you understand that, you can get a fairly clear view as to what you've got to do to heal its problems.

For example, I went out with the people that were installing phones and fixing faults and found that two guys, in a very large van, were providing something like two jobs a day for small business, residential customers. A commercial rate for doing that job was one guy, in a much smaller van, doing about six jobs a day.

When you relate that into cost, you can see that the cost structure of the business is several times higher than it should be for the jobs it is doing. You've got to make the company do the work efficiently, then you can charge the right price for the services you're selling.



The corporate structure you created for TCNZ - a holding company, regional operating companies, and new venture companies - was that modelled on another telephone company?

No, that is a perfectly standard commercial company structure which fits any business. You can look at umpteen large companies and see that they're structured into subsidiaries or divisions. I like subsidiaries because I think legal subsidiaries make the board that manages them have a special status: you can hold them far more accountable for the performance if they have to perform via a board.

I also like the structure of a board because you have to have a chairman. If you want a very tightly controlled organisation - as we needed in this case - I could have a managing director that was responsible for running each subsidiary, and I could have somebody - either myself or somebody that worked closely with me - that was effectively a non-executive chairman for each one. Thus if a managing director didn't perform, it was the chairman's responsibility to sort out that problem.

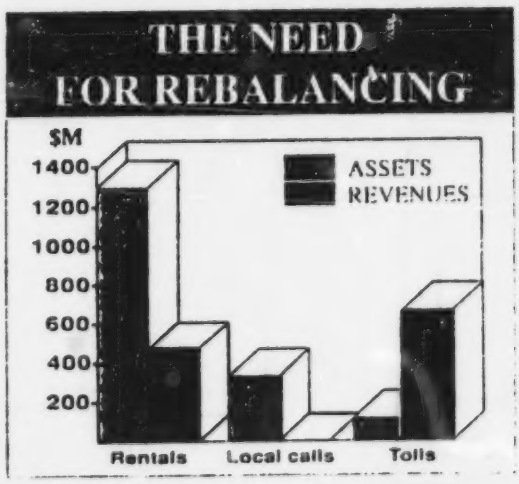
Was it important that there were no plans to set up a regulatory body such as OFTEL in the UK?

I left quasi-government organisations because I found them fairly frustrating both in management terms and in the level of interference with what, I think, are commercial processes. I wouldn't have taken the job unless I had got a very clear view that I had freedoms to manage the company as a commercial company, to not get interfered with by government and to deal with trade union issues as a commercial company would. So I got those undertakings first of all really.

Can you outline the major changes you've implemented to prepare for the open competitive environment?

We had to get the costs right. Local calls are totally free in New Zealand, but toll calls between major centres were probably more than twice the price they should have been. The reason was because Telecom Corp employed twice the number of people it needed to do the job. That came out from the original look around the company.

If you're opening the door to any level of competition and the installed company is charging twice the price for something, it looks a pretty attractive proposition for people to start up in competition. So over the last nine months we've reduced the cost of toll calls by 50 per cent. That's a colossal figure. We've got about another 30 per cent to knock off, which we'll do over the next few years. In the same time, we've increased the profit of the company from NZ$60 million to NZ$240 million. Now you only do that by cutting the operating costs and we've reduced the numbers of people employed from 25,000 to about 15,500 now.



How did you go about getting your costs right?

Cost allocation in a telephone business is actually quite difficult because you are running one network and all your services relate back to the operating costs of that one network. Reducing the operating costs relates clearly to all the prices that you charge. How you apportion your costs to local calls, toll calls or international calls is actually arbitrary in many ways. You could debate for ever how you actually do that. It doesn't matter materially. What matters materially is what your cost of running that infrastructure is - the absolute costs. That's much more important.

An easy way to look at absolute costs is the number of people employed per line. A very crude figure which is worthy of quite good comparison is the number of lines per person employed. When I came to New Zealand, there was something like 45 lines per person. The best telephone companies around the world operate with about 160 lines per person. We're now operating at about 100, and we'll be operating at about 150 lines per person employed in two years or so.

How have you handled the cost of installing rural telephone lines?

We've had to arrive at policies for that. For example, we've stated publicly that we propose to charge the same price for a rented telephone line for a residential telephone customer irrespective of whether that customer is an urban or rural resident. So we don't mind whether they're living out in the middle of the sticks or whether they're in a city suburb, we're going to charge essentially the same price for the same service. Now that implies a cross-subsidy.

New Zealand is sparsely populated with very, very difficult terrain. It's pretty comparable to Australia. When we analysed the situation, we found that implied a cross-subsidy between the urban and rural residential customer at about five per cent. The reason for that is because there is a lot more urban residential customers than rural. So although the costs are a lot higher for the rural customer, the volume means that it's not a major issue. I have no problem in saying that our policy as a commercial company is to essentially charge five per cent more than the true cost for residential urban and to use that money to cross-subsidise residential rural.

The Government opened up TCNZ's network to competition on April 1. Where do you expect your most serious competition?

Well, when you've got a completely free environment where anybody can start up in competition in any sector, the only way that you are going to hang on to your business is being the lowest price, highest quality provider. As the dominant player, you've got a lot of advantages, so its nothing to be scared of. One shouldn't feel intimidated by a total free competitive environment. If you can't survive, then there must be something seriously wrong with the way you've managed things. That's the way you've got to look at it.

Our competitors would normally look to starting up a competing toll service along the principal toll routes. We're free to charge whatever we want over those routes, providing we cover our costs and keep our shareholders happy - so it is up to us to provide better value for money. We can't cross subsidise - that would be against our fair trading legislation - but if our costs are less, as they will be, then we will be able to fight off competitors and still make a good profit.

So we're quite able to protect ourselves from competitors. We're not being restricted to hold our prices high so that they can cream business off. We have nothing to fear really if we run an efficient company. We have a lot to fear if we don't run an efficient company.

Have any major competitors emerged at this stage?

There is quite lively competition already. A pretty long list of Customer Premises Equipment competitors has emerged since they've had a free marketplace. Then there are the value added service competitors who are already operating or who have announced plans to operate in different sectors. Others are negotiating with us or looking at some sort of network infrastructure such as providing optical fibre.

Will these potential networking competitors move into the international business?

That's up to them. The only restriction that I've tried to put on free market competition with our Commerce Department is if we get an overseas total monopoly operator without reciprocity into its marketplace. I'm not talking about a commercial company abroad that decides to have a go, or an MCI or a Sprint, I'm talking about a Cable and Wireless that makes all its money out of Hong Kong - somebody that has a total monopoly stream of income and starts buying business in New Zealand.

That's the only thing I've registered with the Commerce Department as being something it should actually watch for and guard against.

Is that the only restriction?

Yes, that's the only restriction that I think is necessary. If people have got to operate commercially with commercial assets that they pay for at the full commercial price, then that's fine.

THE NEW COMPETITIVE ENVIRONMENT

- **Government aim to improve national economic performance by promoting competition throughout the economy.**
- **Telecommunications markets progressively opened to competition from October 1987.**
- **Fully competitive from 1 April 1987.**
- **Pricing and commercial behaviour covered by Commerce Act, FairTrading Act.**

Are you under any obligation to procure equipment that is produced in New Zealand?

No, we would not see it as possible to be held to those restrictions because our competitors would not necessarily be held to them. In a free marketplace, we must have the same rules to play with as they have.

Do you expect competition in the cellular mobile telephone market?

We've been asking the government to make a separate frequency allocation for a cellular radio competitor ever since I got there in March '88. Anybody can put cables in the ground or use satellites or whatever to compete with us, but nobody has any opportunity to compete on cellular radio. There is just one set of frequencies that we've got, and there's no way that's defensible. You're going to create massive opposition to the services you're providing if you try and operate like that. People are going to feel it's wrong that nobody has a chance to compete and that you've dominated the whole environment.

Cellular radio today has a potential to go to somewhere like 40 or 50 people per thousand of population. Most countries of the world have got five or six or seven per thousand, so there's plenty of gravy there. One doesn't have to feel too hemmed in about missing out on the customers.

Is it correct to say that you have followed the UK model for cellular telephones?

That's right. The UK model is to have the network provider providing just the network. Now in the UK they regulated it that way. We thought it was the best model so we actually chose it to create an intensely competitive retail environment. We have a company with about 30 people that essentially runs the network. It has five customers really that have set up their own retail franchises in heavy competition. They buy airtime wholesale from the network, install and maintain the equipment, bill customers.

VALUE ADDED COMPETITORS*

DATAMATIC NZ	Integrated Voice Data
PAXUS	Value Added Digital Links
WANG	Integrated Voice/Data
GPT	Paging Networks
ANZ BANK	Value Added Services
CENTRON	Packet Switched Networks
EAGLE	Value Added Networks
GCS	VAN/VAS
CARDINAL	Value Added Networks
DATACOM	Value Added Networks
SYNET	Electronic Mail

*Already operating or who have announced plans

take the bad debts and get between 15 and 22 per cent of the airtime revenues of the customers for doing that. The reason for 15-22 per cent is that if they double their quota, say, they can move up in odd percentages from the minimum of 15 per cent.

It works extremely well. The net result is that we've been running our cellular radio for just over a year, and we have about the same penetration as Australia in terms of customers per thousand population. We've got about six and a half, and I think Australia has about seven. That means that we virtually have the same penetration as the UK - who've been going for five or six years - and we've done that in not much more than a year. If you look at our press, you see several adverts in every newspaper saying: 'Buy your carphone installed from us - NZ$499.' That's the standard price for a basic carphone. The hand-helds go between about NZ$1200 and $2000.

Are you considering the introduction of the new cordless telepoint payphone service?

Well mobile communications - let's give it a global name - is in its infancy really. It's a very, very complicated, mixed field right now. There are many competing technologies around. Telepoint is one of those competing technologies. I would hesitate to give an opinion as to whether one technology is going to be better than another, frankly.

Our approach to telepoint will be much like our approach to most other new services: to give it a go with limited financial exposure, do a lot of analysis and customer sampling and find out whether there is some true potential there. Cellular, of course, you don't have to do that. Somebody has already done that for us and you can just plough on with the cellular business and know what the outcome is likely to be.

One of your New Venture Companies, Telecom StarSystems, provides Electronic Data Interchange services among other things. Do you see a burgeoning market for EDI?

No, not really. EDI generates a small additional volume many EDI companies do you know around the world that make money? There are many, many new areas in the communications sector which generate traffic on a network. EDI is one of those. It is quite fundamental to the structure of commerce and business in the future, but it is not material to the growth or to the health of the telephone network. It is something that one should clearly do, and see done. Whether a telephone company does it, or whether it is done by a variety of value added providers is, in my book, neither here nor there.

What do you see as essential to the health of the telephone network?

Being the lowest cost, highest quality provider. That way it doesn't matter who provides the services, because they're going to be pretty interested in using your infrastructure. And if you make your network more sophisticated, they'll want to buy more sophisticated offerings. Perhaps some of those are EDI or other offerings which help people to get into the business.

What are the major services offered by Netway, your new joint venture company?

Netway is a way of getting into the general area of facilities management which a telephone company can't really do. It is tied up with another company that provides a lot of computing and bureau services, so it can pitch for a different sort of business. Netway can go to a company and say: 'You're running X number of computers now, as well as a data network, loads of PABXs, loads of dedicated voice channels etc. Let us give you a global price for running the computer environment and the data and voice network environment'. It is in a far better position to do that than we would be in our own right, which is basically why you form a joint venture. You do it because you can't bring all the pieces of the party together.

Netway will be providing EDI and other types of services as well, but there might be a slightly different bias to the way these are provided, or they might be customised in another way. All these services, like EDI, have to sectorise in a dozen different ways - or many dozens of different ways - to match specific and quite dedicated market niches. You need quite a lot of players out there chasing it, because no single entity is going to get it right for everybody.

Have you expressed a view on the possible privatisation of Telecom Corp?

My attitude is well-known. I feel that the company is now operating very much as a commercial company and will continue to do so. The new management that we've recruited, some 90 in total, none of them has worked for government departments or understands the government department culture at all. Unless there can be some guarantees that the freedoms that we have now to run a commercial business can continue, then the company will deteriorate. The only way the government can guarantee it continuing is to sell it.

COMMERCE

MINISTRY OF COMMERCE

Te Manatu Tauhokohoko

Communications Division

Invitation for Expressions of Interest in Radio Spectrum for Sound Radio Broadcasting

Background

The New Zealand Government has announced, as part of its policies on telecommunications, its intention to make provision for new services through a revised regime for the allocation of radio spectrum. Legislation, in the form of the Radiocommunications Bill, is currently before Parliament.

The Ministry of Commerce, in preparation for the implementation of the Government's policy proposals, is seeking information on the demand for new services to assist in the provisional design and planning of available spectrum for such uses and, subject to the enactment of the legislation by Parliament, the establishment of procedures for the allocation of that spectrum.

The Ministry has used, where appropriate, terminology and procedures from the Radiocommunications Bill, but recognises that the Bill is still under consideration by Parliament and therefore subject to change.

Purpose of Invitation

The purpose of this invitation is to obtain information on the level of interest and demand in radio spectrum which has international use for radio broadcasting. Specifically these are the AM Broadcasting Band (526.5 to 1606.5 kHz) and the FM Broadcasting Band (88.5 to 100 MHz). The Government, as part of its policy decisions on sound radio Maori broadcasting, will ensure that use of AM or FM frequencies is made available for the development of radio services, including those directly sponsored by iwi authorities, whose primary objective is the promotion of Maori language and culture. Accordingly this invitation is also to obtain additional information for this purpose.

Comments on International Usage

The ITU table of Region 3 frequency allocations is as follows:

526.5 - 535 kHz	BROADCASTING, Mobile
535 - 1606.5 kHz	BROADCASTING
87 - 100 MHz	FIXED, MOBILE, BROADCASTING
100 - 108 MHz	BROADCASTING

By way of footnote (586) in New Zealand, the band 100 - 108 MHz is allocated to the land mobile service on a primary basis and to the broadcasting service on a secondary basis.

International convention has generally established the FM band as being limited to a maximum range of 88 - 108 MHz.

Existing New Zealand Usage

The AM band (channelled by way of international agreement at 9 kHz) is available subject to existing usage and co-ordination requirements with Australia.

The 88.5 - 100 MHz FM band (nominally channelled at 100 kHz) is available subject to existing usage. The frequency range 100-108 MHz has nationwide usage by land mobile services and is known as "B" Band Land Mobile.

The Radiocommunications Bill expressly provides incumbency rights for existing broadcasters and land mobile operators. This invitation must not be taken as implying that presently assigned frequencies to such persons will be changed or made available to any other person.

Format of Expressions of Interest

Expressions Of Interest may be made in any format. However in order to ensure that maximum account can be taken of each response as much as possible of the following information should be included:

(1) Name of person or organisation
(2) Postal Address
(3) Business telephone contact number
(4) Contact person for technical matters
(5) General description of the type of service to be provided
(6) Geographical extent of coverage(s) desired
(7) Transmitter site names (if known)
(8) Preferred date of commencement of service

A booklet is available from the Ministry of Commerce on the Government's policies on Maori broadcasting which includes information which may assist those persons wishing to indicate an interest in respect of Maori radio services.

Confidentiality

All expressions of interest, including those marked Confidential, will be subject to the provisions of the Official Information Act. It is intended that a brief summary of all expressions of interest, including names and addresses, will be made available on request.

Address for Expressions of Interest

Expressions of interest should be addressed as follows: The Manager
Radio Spectrum Policy Communications Division Ministry of Commerce
PO Box 2847 WELLINGTON.
Telephone Number (04) 732-200. Fax Number (04) 499-0797
All responses received will be acknowledged by return post.

Closing Date

The closing date is Noon on Friday 3 February 1989. The Ministry of Commerce may seek additional information or comment from any person

APPENDIX #5

PART II

DEREGULATION OF THE RADIO FREQUENCY SPECTRUM

A

PUBLIC FORUM

MINISTRY OF COMMERCE

MARCH 1989

Report compiled by:

Canadian High Commission
P O Box 12-049
Wellington
NEW ZEALAND

December 1989

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I N T R O D U C T I O N

This report was assembled during the major part of 1989 and is intended to cover the latest issues concerning the deregulation of New Zealand's airwaves. Finally completed during December 1989, this report should be read in conjunction the "Communications Industry" report (available from this post) and will be updated from time to time as new developments surface. It should supply the reader with the basics of how the New Zealand government sees the 'auctioning of the airwaves' working.

Most of the material has been supplied courtesy of the Ministry of Commerce and the office of the Minster of Broadcasting.

The first thing to emphasise is that New Zealand does not have a "Ministry of Post and Telecommunications" as do other countries. The only applicable ministries are as above (although in fact the Ministry of Broadcasting does not really exist per se).

The Ministry of Commerce confines itself to matters such as use of frequency spectrum (as outlined in this report), government legislation and general compliance with such legislation. It is not a regulatory body which presides over the various suppliers and users of communications systems and services.

The broadcasting concerns of government are mostly aimed at programme content and moral issues rather than commercial activities. Major issues revolve around the level of local input deemed desirable in programmes and cultural sensitivities.

As a result of the "Telecommunications Act (1987)" and its subsequent amendment (1988) disagreements over connection to the public telephone network (amongst other communications user/supplier issues) became civil rather than criminal disputes. The industry and public are now reliant only on the "Commerce" and "Fair Trading" acts (1986) to address problems and ensure competitive practices within the industry.

Public reaction to these policies has been mixed. Many questions have been raised and the government is currently evaluating submissions from interested parties.

For further information on New Zealand Hi-tech industries contact:

The Commercial Officer
Canadian High Commission
P O Box 12-049
Wellington
New Zealand

Phone:(64-4)739-577
Facsimile:(64-4)712-082

PRESS STATEMENT
HON DAVID BUTCHER
MINISTER OF COMMERCE

MARCH 17TH

EMBARGOED UNTIL 10AM

RADIO SPECTRUM MANAGEMENT: TRANSITIONAL ARRANGEMENTS

The Minister of Commerce, the Hon David Butcher, today announced the transitional arrangements which have been developed as part of the implementation of a modified management regime for the use of the radio frequency spectrum.

Mr Butcher made the announcement at a seminar he attended in Auckland with the Minister of Broadcasting, Hon Jonathan Hunt, where the new management regime was discussed with Ministry of Commerce officials and representatives from a wide range of users of the radio frequency spectrum.

The announcement follows the adoption, in principle, by the Government in December of a report, commissioned by the Ministry of Commerce, which examined spectrum demand and appropriate methods to deal with the allocation of radio frequencies to commercial and non-commercial users in New Zealand.

"New Zealanders are, per capita, amongst the heaviest users of radio frequency spectrum in the world," Mr Butcher said.

"The use of the finite resource touches every New Zealander in some way every day."

"It is important to ensure that all views are identified and taken into account in the implementation of the new regime.

"The Government has agreed that the transition to the new regime still requires further consultation with user groups such as those involved in public safety and security as well as with the New Zealand Maori Council.

"Holders of current licences enjoy no legally enforceable right to continued spectrum use and it is important to have this consultative process to ensure a smooth transition to the new regime.

"The key to the change is the creation of legal and tradeable property rights for some portions of the spectrum, together with a tendering system for the transfer of the spectrum rights from the Crown," the Minister said.

"However, until spectrum rights are specifically transfered by the Crown to another person, the present licensing provisions will generally remain applicable."

Other major features are:

* Where demand is shown to exceed supply, the transfer of the resource will be by means of a "second price" sealed bid tender system.

"This means that the successful tenderer will pay the amount to the Crown for the property right that the next, and unsuccessful, tenderer offered," said Mr Butcher.

* Existing licensees, whose current usage corresponds to a spectrum right offered by the Crown, and who are unsuccessful in the tender process, will have the right to retain the use of the spectrum by matching and paying the highest bid.

* Existing licensees who do not gain the spectrum rights corresponding to their exisiting licences will be granted a temporary right for three years, subject to the payment of a rental based on the value of that spectrum and the administrative costs.

* The tender system will be such that price distortions through manipulation and collusion will be prevented.

* The present Commerce Act makes adequate provision for protectio from anti-competetive hoarding of the spectrum and denial of use.

"The legislative timing means it is unlikely the new regime will be introduced before 1 July 1989," the Minister said.

"An interim policy directive will be issued by the Minister of Commerce facilitating the competitive provision of telecommunications services as far as the licensing of radio apparatus under the present legislation is concerned."

ENDS

FOR MORE INFORMATION: HELEN MORGAN (04)719-879 (WK)
(04)753-737 (HM)

RADIO SPECTRUM MANAGEMENT SEMINAR
AUCKLAND, FRIDAY 17 MARCH 1989

MAIN FEATURES OF RADIO SPECTRUM MANAGEMENT: TELECOMMUNICATIONS

MICHAEL LEAR

MANAGER TELECOMMUNICATIONS AND POSTAL POLICY

MINISTRY OF COMMERCE

In this address I will outline the main features of the new regime for allocating frequencies with a particular focus on telecommunications. I will draw particular attention to the overall process of bringing spectrum rights within the new regime, the tendering process, implications for existing users and competition policy aspects. Later speakers will look at details of legal aspects, implementation of the new system and engineering.

The New Regime

As you all know we are on the eve of a quite radical new era in telecommunications in New Zealand. The new Telecommunications Act, which comes into force in a couple of weeks, allows anyone to provide whatever telecommunications services they wish, subject in essence only to the constraints of general law, some rules in providing international services and the need to obtain rights to use radio frequencies where these are required. This massive change in the regulatory environment will result in substantially increased demand for some radio frequencies. This in turn will result in scarcity of some frequencies most notably cellular radio or mobile telephony, and to a much lesser extent for radio paging, fixed links and land mobile user in one or two areas.

The Government has looked for a simple, easily understood, fair, and efficient system of spectrum allocation to cope with these competing demands and situations of scarcity.

Main Features

The main features of the new system are set out in slide A. At the top of the list is the definition of legal property rights in spectrum. This simply means that the rights to use a particular frequency will be defined so that it is as clear as possible what they are to both the rights holder and other rights holders.

The definitions will need to spell out the limits of the frequencies (for example a band from 494 to 550 Megahertz), the levels of interference which must be tolerated within the band, any limitations on emissions outside the band, the time period for which the right applies and conditions which apply to the

right. To provide for flexibility, rights holders could be permitted to modify interference limits where all parties with a significant interest agree. We are well aware that the full nature of these rights will need to be spelled out well in advance of any auction.

Rights could be tendered either as bands, capable of accommodating several users, or as products, designed for one particular use, for example for cellular radio.

Rights are to be fully tradeable. This recognises that uses of spectrum differ over time as demand and technology changes. Tradeability is simply a way to smooth the way for these sorts of changes. Spectrum users will be able to trade their rights in much the same way as most other legal rights. It will be necessary, however, to maintain records of usage, both to meet international obligations and to provide for quick resolution of any interference problems which might arise. Probably the best way to do this is through a central registry, to which details of transactions must be advised as are land transactions.

Tradeability will also allow rights holders to sub-divide and sell part of their rights.

Definitions of rights must facilitate likely uses, in order to allow for users needs to be met. Where several uses are possible and likely, for example for cellular radio or fixed links, definitions should ideally be framed in a way which could provide for all uses, to allow the spectrum to move to whichever is the more valuable use. Those with interests in particular rights will be invited to make them known and comment on just how these rights should be defined.

According to our consultants, NERA, the duration of rights should be as long possible on economic grounds, although if rights are of limited duration, the efficiency loss will be small if rights are retendered well in advance of expiry. The new regime will provide for long-life rights, normally expected to be of 20 years duration, in order to encourage investment to use the rights.

As the initial work of defining each category of rights is completed, that category could be moved from the present system of radio licences administered by the Radio Frequency Service to within the provisions of the new legislation. Cellular radio would be moved into the system at an early stage, followed by selected bands suitable for fixed links and UHF land mobile bands. Much work will be required in bringing additional categories of frequencies into the new system, necessitating a staged process.

As spectrum rights are brought within the new system, they will be allocated by competitive tender. Slide B lists the main features of the system.

Tenders will be held on a sealed bid basis, rather than in an open auction room. This simply means that written tenders will need to be received by a particular time, then opened and the winner determined. The procedure helps to ensure bidding is

fully competitive.

Second price tendering is proposed in order to ensure that tenders are based upon the true economic worth of the spectrum (its opportunity cost). Slide C provides an example of second price bidding under which the successful bidder pays only the next highest bid. The system ensures that the successful bidder is asked to pay no more than necessary to beat the next bid. By contrast, under a system where the top bidder pays its actual bid, there is an incentive to bid strategically, attempting to reduce bids below what the spectrum is worth to the bidder, in case the bid is substantially higher than the next bid. The second price system should assure bidders that they can safely bid up to what they consider the spectrum is worth, without fear of paying any more than they have to. The system suffices to meet the Government's objective of ensuring the spectrum goes to its most valuable use, without it costing the winner more than necessary.

It may sound like a cliche to suggest that an "open and competitive" system is wanted, having already stated that tendering will be the means of allocation. "Open and competitive" in this case, however, simply means allowing all bona fide bidders to participate. In general tenders will be held wherever more than one person is interested in particular spectrum. To ensure bids are bona fide, upfront cash deposits will be required, probably based on a proportion of the bid, to ensure that bidders are serious about wishing to acquire what they bid for.

As you would normally expect in any tender, the ability to decline any or all bids will be a feature of spectrum allocation, as a final safeguard against impropriety.

Existing Uses of Spectrum

The question of how existing users' spectrum can be brought within the new spectrum management system is of vital importance. In essence, it is proposed that spectrum already in use under existing one year licences be treated in the same way as unallocated spectrum, that is put up for open competitive tender. Other speakers will identify the choices available in designing the spectrum prior to tendering.

NERA identified a number of reasons for this approach, including efficiency and equity. It can readily be seen that if new entrants must pay the full cost of their spectrum, but not existing users, the newcomers would be at a significant competitive disadvantage. Managing all spectrum in the same way, through initial tendering, will allow the full efficiency gains of the new system to be realised, as all spectrum can be quickly included in the new system.

Alongside these considerations, however, is the need to have a smooth transition to the new system, without unnecessary disruption to ongoing services. This will be provided for through the following special provisions, also listed in Slide D:

- Second price bidding (which ensures incumbents do not pay any more than necessary)

- Pre-emptive bidding rights. These will allow incumbents an option to retain spectrum simply by matching the top bid after a tender has been held. This process provides an absolute guarantee that incumbents can retain use of spectrum already in use, provided they are willing to match what it is worth to the winning bidder.

- Three year incumbency rights. These will allow an incumbent whose tender is unsuccessful to retain an absolute right to continue to use their current frequencies for three years. Continued use would be subject to a resource rental related to the market value of the spectrum. The breathing space allowed by the three year rights would allow time to develop alternatives to use of that spectrum, purchase of alternative spectrum, purchase of alternative services from other spectrum holders, or perhaps uses of other means of communication (eg substitution of cable based communication for fixed links).

- Other provisions of the new system which will favour incumbents will be that for the first time, long term rights will be available rather than one year radio licences or five year warrants; the Commerce Act will restrain anticompetitive bidding behaviour; the design of parcels of spectrum for tender will take into account existing uses; and there will be provisions to ensure participation in the tendering process is bona fide, such as requiring cash deposits to accompany bids.

Another important feature of the new system will be continued Ministry of Commerce management of certain spectrum bands at least for an interim period. This will probably apply in the following instances:

a Residual frequency management where spectrum products are tendered, eg if a high power FM radio product suitable for Auckland is defined, use of that frequency elsewhere in New Zealand may have to be managed

b Frequencies below 44 Mhz which can cause long distance interference, except AM broadcasting frequencies which are already internationally allocated

c Frequencies above 3.6 Ghz, if there is no significant demand

d Frequencies to provide for short term broadcasting uses.

Administrative charges for Ministry of Commerce frequency management will remain for spectrum users currently paying fees, but there is a good prospect that they will drop, as the new

system is introduced, and the Ministry's expenses fall.

Finally, I wish to specifically mention competition safeguards. Generally, it is expected that the Commerce Act should provide adequate safeguards, provided it is amended to ensure the Commerce Commission can scrutinise competition issues affecting broadcasting or telecommunications, where large companies wish to acquire spectrum assets. Particular scrutiny may be needed where a monopoly or market dominance already exists, as in cellular radio or television currently. The Commerce Act, as it stands, could also be invoked in the event that anticompetitive spectrum hoarding occurs.

Conclusion

In summary, the new system will provide for the definition of spectrum property rights, which will allow operators far greater freedom to manage and develop their use of spectrum than before. This should bring advantages for both new and existing operators. Safeguards for existing users interests will be built into the transition to the new system as will safeguards to ensure competition in markets for which spectrum remains a critical resource.

The final message of this address is probably the most important. We would welcome any comments you wish to make to us, either here or in Wellington, about how to make the new system work effectively.

SLIDE A

MAIN FEATURES OF NEW SYSTEM OF SPECTRUM ALLOCATION

1 Legal Property Rights in Spectrum will be defined

2 Rights to be tradeable

3 Rights to be defined to meet likely needs

4 Rights to be of long duration

5 Progressive transfer of spectrum to the new system

6 Rights to be initially allocated by tender

7 Tenders to be on sealed bid, second price basis

8 Existing spectrum users to be protected

9 Government to continue to manage certain frequencies

10 Safeguards to preserve competition.

SLIDE B

FEATURES OF TENDERING SYSTEM

1 Sealed bid basis

2 Second price tendering system

3 Open and competitive basis of tendering

4 Deposits to accompany tenders

5 Ability to decline tenders if serious distortions or impropriety occur.

SLIDE C

SECOND PRICE BIDDING

Under second price bidding the highest (successful) bidder is asked to pay the price of the next highest, unsuccessful bid, rather than the highest bidder's own bid. Say there are four bids for a radio frequency as set out below:

	Successful Bidder Pays
Bid A	$50,000
Bid B	$30,000
Bid C	$20,000
Bid D	$500

In this case, the successful bidder pays $4,000, not the $10,000 it was prepared to pay.

SLIDE D

PROTECTION FOR INCUMBENTS

1 Second price bidding

2 Right to match the highest bid

3 Three Year Guarantee of Incumbency

4 Funding to assist certain non-commercial broadcasters

5 Resource rental to apply to those whose spectrum is not auctioned immediately

6 Availability of long term rights

7 Commerce Act Scrutiny of Anti-competitive behaviour

8 Definition of rights to correspond to existing users

9 Provisions to ensure bidding is bona fide

RADIO SPECTRUM MANAGEMENT SEMINAR
AUCKLAND, FRIDAY 17 MARCH 1989

MAIN FEATURES OF RADIO SPECTRUM MANAGEMENT: BROADCASTING

DAVID GALT
MANAGER BROADCASTING POLICY
MINISTRY OF COMMERCE

It is my intention in this address to outline the main features of the new regime for allocating frequencies for broadcasting for you, in order to provide an overview. I will pay particular attention to the overall process of bringing spectrum rights within the new regime, the tendering process, implications for existing broadcasters and competition policy aspects. Details of legal aspects, implementation of the new system and engineering aspects will be covered by later speakers.

The New Regime

It is useful to start with the reasons why a new regime is necessary. Quite simply, with the repeal of the Broadcasting Act 1976, a flood of potential new broadcasting services is possible. Likewise, new telecommunications services are possible. Each will appeal to a particular audience or market. There is likely to be more demand for spectrum than there is spectrum available, particularly for VHF television broadcasting and FM sound broadcasting. Allocation of spectrum to those willing to pay most for it has three major advantages:

a it means that spectrum is likely to allow new broadcasters to set up, where the public demand for their services is greatest. Each potential broadcaster can assess for itself whether its service will be viable. The Government will of course ensure that certain priority services are able to be provided for through the provision of funding support.

b it means that new services can start up much more quickly. With the best will in the world, it would be time consuming to process applications for new services administratively, given their sheer volume.

c all comers will know how to obtain spectrum cleanly and easily where it is available, saving large amounts of time and money for all concerned.

Given these reasons, the Government has looked for a simple, easily understood system of spectrum allocation, which facilitates new services, and at the same time provides for existing services to continue to meet public demand.

Main Features

These are the same as those outlined in the 'Telecommunications' section on pp 5-13. Therefore, the rest of this text and pp 16-23 have been deleted from this report.

RADIO SPECTRUM MANAGEMENT: IMPLEMENTATION ASPECTS

INTRODUCTION

The previous speakers have covered the overall economic and market driven approach being followed by Government, and the specific policy provisions as they relate to the radio spectrum.

I intend to follow with a more detailed focus on the implementation aspects including timing, the expression of interest phase, the design of spectrum rights for allocation, and transition to what I would call the normal operation of the devolved spectrum management process.

Before covering these details there are several introductory points that I would like to make.

Firstly, the Government has decided that the regime to be adopted will include a mixture of administered licences (similar to those already in use today) and the creation of property rights in the form of both spectrum "products" and spectrum "bands". Whilst this may seem complicated, it is essential if the transitional process, which may continue for some years, is to run smoothly.

Secondly, and speaking frankly, some views have been expressed that the policy direction the Government has adopted is perhaps impracticable. I would like to draw a few parallels with the existing processes that occur.

Several examples come to mind:

- In the VHF and UHF land mobile service where Government is now not physically licensing, or controlling on a day to day basis, the use of mobile stations in the two frequency service. Rather the licensee of the base apparatus is responsible for this work.

- For the mobile telephone service (cellular) where the overall band of 333 channels is made available to the network provider and the provider then determines the disposition of channels and advises the RFS of the locations proposed. Only inter service co-ordination is usually necessary by the RFS in this area of spectrum.

- In the fixed service, the two major network operators, the then BCNZ and NZPO, each operated in spearate bands with essentially wide freedom for intra band planning.

These three examples show that it is readily possibly to adopt a suitable framework and allow much of the judgemental work to be done by those most directly affected.

It is interesting to note that whilst the first example is provided for legislatively, the second is a practical recognition of the nature of the service, and the third is, or was, a "local arrangement".

- In the broadcasting service, "property rights" are already established on an international basis by the Geneva 1975 plan for MF sound broadcasting band. This is quite a good example of the formalised subdivision and rights/obligation specification process. It also shows the complexity of establishing rights in bands with international implications.

These show that there is nothing inherently preventing a greater devolvement of spectrum management, given that the framework established must provide:

- availability of information.

- clear and legal definition of rights and obligations.

- appropriate incentives for rational behaviour, together with avoidance of anti-competitive behaviour.

- dispute solution mechanisms.

The same types of process that occurs now will still occur in the new regime, but probably by undertaken different persons, with different incentives and rewards, and possibly at different stages in time.

There are a number of areas of spectrum where apart from perhaps the actual legislative framework, the use of spectrum will continue much as it does today. It is not possible to be comprehensive in detailing these bands but they will be based on allowing for the maintenance of New Zealand's international obligations and the practicality and costs of adequately defining the necessary property rights and associated procedures. As many of you will be aware the NERA consultants proposed that the spectrum below about 44 MHz should be largely managed as at present (but with one notable exception) and there is no intention to vary this. Similarly where there are internationally accepted services and channelling criteria which New Zealand is obliged to consider, there will be little change.

The overall process of allowing maximum freedoms to right holders is of course balanced by the need to recognise in the initial process of design the reality of practical and existing systems. This means the recognition of bandwidths necessary for television and the bidirectional nature of telecommunications to give two examples. Notwithstanding the freedoms available to right holders, their utilisation of such freedoms will be constrained by factors such as equipment availability, industry recognised standards and the like, but the important issue is that judgements on these factors will be made by the persons who are most affected.

TIMING

Firstly it must be said that the present timings are indicative and therefore useful for planning, but they should not be used as investment criteria. Secondly any references to specific months, etc are founded on an assumption that the relevant legislation will be passed and in force by mid 1989. I have used the square brackets to indicate such references. The programme presently proposed is contained in an annex to this paper.

TRANSITION

There are several stages to the transitional process, and they are inherently different for Telecommunications and Broadcasting users. This is because of the different legislation involved.

Telecommunications

Firstly, deregulation of the telecommunications environment was legislated for in December 1988 and comes into effect on 1 April 1989. The relevant regulations (Licensing of Links and Leased Circuit) have been revoked with effect from that date and Radio Regulation 13(4) has also been revoked.

These changes mean that from 1 April the Radio Frequency Service will be able to consider radio licence applications on the same basis as at present, but from a wide range of persons and organisations and not just from the Telecom Corporation or those holding Link Licences.

However, there are expected to be a few circumstances where it would be a contradiction of present Government policy to grant applications, and in such circumstances it will be necessary to find alternative ways to meet the service requirement (these may or may not include radio), or to await the introduction of the new legislative regime in a few months time.

The circumstances envisaged are those where a grant of licence would preclude actual or potential competition or where the application is unlikely to be proceeded with in the immediate future (ie is clearly speculative).

For the period post [1 July] there will be a number of effectively "routine" licence applications for minor variations to usage or addition of new routes and frequencies to existing infrastructures or services. These will generally proceed with little hinderance, all other factors being satisfactory. However, at times there will be a need to make what I will call step function changes, ie either a new type of service, a new frequency band or the like. In these circumstances applicants should expect that, whenever possible and practicable, the new provisions would be applied. In addition, and according to a predetermined timetable, various "wholesale" movements of spectrum to the new system would occur. Such movements would, of course, carry the incumbency protections to existing licensees outlined by the other speakers.

At the times of such spectrum movement, wherever practicable, any directly comparable spectrum would also be placed into the new

regime and be allocated along with any other new spectrum. This will help to establish a common basis of usage, and will tend to remove any artificiality created by only placing small parcels of spectrum under the allocative process.

Broadcasting

The prime control of Broadcasting at present rests in the Broadcasting Act 1976, and while that Act continues the grant of the necessary radio licence is subject to the holding of a warrant or Authorisation from the Tribunal.

It should be remembered that the definition of Broadcasting includes the generic category of "narrowcasting", so that background music and encoded types of service are included.

Government has recently decided that the relevant provisions of the Broadcasting Bill and the Radiocommunication statute should enter force at the same time to provide for a smooth legislative transition between the two regimes. Therefore, unlike in Telecommunications, there will be no interim deregulated period under the existing Telecommunication Act provisions.

At that time [1 July] the provisions of warrants will generally expire, or be taken up by corresponding provisions in the new Broadcasting legislation. Programme standards and advertising conditions are examples. In some cases, there are policy provisions which may be continued by additional conditions on the existing radio transmitting licence. (The only direct control mechanism readily available to Government is indeed the radio licence).

So at the time of the new legislation [1 July], there will be two "pathways" to spectrum

- the Telecommunications Act (which may be subsumed into a part of the new Radiocommunication statute.

- the Radiocommunication statute.

There will also be clear policy provisions favouring the use of the new Radiocommunication statute wherever practicable.

In broadcasting therefore, it is likely that there will be more reliance on making spectrum products available on a "wholesale" basis rather than on a piecemeal basis through time. This recognises that a new broadcasting station is a significant investment and that some time is always necessary to plan and organise such a station.

The relative priorities are:

- UHF spectrum suitable for television services, particularly in the major population centres

- VHF-FM and subsequently MF-AM sound broadcasting, again in major markets.

and later,

- VHF spectrum for television broadcasting.

However, given that the Tribunal is expected to have recently dealt with a significant number of applications in major markets, there are expected to be lesser pressures for major new sound broadcasting stations.

Should such demands arise, then the timetable can be reviewed and priorities adjusted. There will also be a number of short term requirements arising and these will be, of course, dealt with as they arise. Similarly, usage where there is no significant demand will also be accommodated with as little delay as possible.

The overall emphasis clearly has to be on accommodating new entrants and usages. To some extent the allocation of (or reallocation of) existing heavily used, and therefore highly technically interactive spectrum, will be taking place after new demand is satisfied and the system is "bedded" down and clearly working effectively.

THE "DEVOLUTION" PROCESS

Given that spectrum rights are to be created legislatively by the Crown, and allocated to others so that services can be provided using the radio spectrum resource, it is necessary to plan for that process to occur.

This involves:

- Expressions of interest

- Design of spectrum for allocation

- Allocation itself

Each process needs to be carefully managed if participants are to have the right incentives and expectations from the process.

EXPRESSIONS OF INTEREST

This is the first publicly visible stage, and is initiated when it is considered necessary and appropriate for the Crown to make spectrum rights available to those who wish to obtain them.

Clearly at this time the Crown already has a clear view on exactly which spectrum is to be allocated, together with substantive reasons for so doing (ie substantive new demand, competitive pressures, etc).

The broad description of the spectrum under consideration is to be notified to interested parties (and indeed publicly) with a request for views on their likely interest in right ownership, together with technical or operational factors seen to influence the subsequent spectrum design.

There is a concern that at this stage there may be a number of "speculative" responses which are either not soundly based or are in practice highly unlikely to proceed. These are seen to be of concern because they may unduly influence the subsequent design

of spectrum, or may give false indications of demand and thus bring forward particular (inappropriate) allocation processes.

It is interesting to consider the recent responses to the investigation into use of the 23GHz band where, from a mailing of 80 persons and public notices, some 19 responses were received:

- 13 advocated a specific use and some gave a preference of frequency plan. Some also favoured a mixture of uses eg BSS and FX.

- 3 identified availability of particular equipment.

- 3 had no specific interest in the band.

This indicates that it is important to carefully structure the request to obtain the necessary information, and also to ensure the "bona fide" nature of the response. Some form of lodgement fee may be appropriate, but there would be no wish to inhibit any genuine viewpoints.

SPECTRUM DESIGN

This is seen to be potentially the most complex part of the process, and is where the broad interactions of spectrum rights must be considered.

Telecommunications

Perhaps the highest density usage in the VHF/UHF spectrum is for land mobile purposes and it is appropriate to consider this area as an example. Two cases are relevant, existing occupied spectrum where a band plan and technical parameters already exist, and vacant spectrum where no such planning exists.

For "vacant" spectrum, it is necessary to determine, from the expressions of interests, the technical parameters for the likely usage and subsequently to adopt spectrum edge criteria for interfacing with the adjacent spectrum. Note that in some cases the edge criteria may be "skirts" rather than a single frequency limit.

At this stage it is appropriate to specify the edge criteria of the adjacent spectrum, ie the level of inband radiation that the new usage must accept.

At this stage, there has been no "geographic" or "channelisation" subdivision, and the spectrum is merely placed in contex of its neighbours.

The question of whether to create a band plan, and then allocate channels in nationwide or smaller areas is complex. It is influenced by economic, technical and legal factors in several different areas. The attached figure shows some of the choices.

Crown costs are minimised by treating the spectrum as a block with further refinement by the right holder. The refinements, and particularly their quality, will affect the contracting and transaction costs, as well as equipment parameters and costs. Wherever and whenever costs are incurred, they add to the overall

total of costs which under the optimal solution should be a minimum. Technically, a band needs to accommodate a mix of two frequency and shared single frequency services and this is typically done by utilising the transmit-receive gap for the single frequency service. Switching ranges are thus able to be accommodated. However, separation of these two types of usage gives, in effect, a preliminary band plan.

Where a geographical distribution is required in the design, the "reference system" will be used, ie a typical apparatus installation and power, location, antenna will be specified, such that this is the initial basis of co-channel planning and thus geographic distribution. Other sites can of course be used subject to no greater interference or protection, or a mutual recontracting of such criteria with the adjacent right holder.

Each particular circumstance will give rise to potentially different decisions, and possibly different compromises. The expression of interest phase is critical to getting the spectrum design to a satisfactory stage.

Broadcasting

It would be useful to now give you a general indication of how the various spectrum rights resulting from the design process are perceived in the broadcasting area.

- MF-AM Sound broadcasting, 526.5 - 1606.5 KHz.
  The ITU plan mentioned earlier gives the basic framework for spectrum products, together with a mechanism for internationally "recontracting" the in band (ie co-channel) interference levels. Thus the design is largely completed, and the major issue is in the allocation area.

- VHF-FM Sound broadcasting, 89-100 MHz.
  There is established usage in some parts of this band, and more would be expected following Broadcasting Tribunal decisions on applications. This then sets the initial product framework, with clearly a reasonable number of additional products able to be developed. At this stage it seems that it may be appropriate to indeed develop these additional products and allocate accordingly. There are technical and equity arguments to support this action, but firm decisions will need to take into account the amount and disposition of vacant spectrum when the devolvement of the band is considered.

- VHF Television Broadcasting, Channels 1-10 (11)
  There are two well established network services using this spectrum, with the third service also being established at present. The services established, or to be established, are potentially highly interactive from a technical viewpoint, and indeed make highly efficient use of the spectrum to achieve the coverage objectives. As those of you who were exposed to the technical activity before, during and after the third service hearings will know, the "transaction" costs of changing spectrum usage are certainly non-trivial. These factors indicate that the present usage should be reflected closely in the "product" definitions. and probably also used to accumulate a number of "products"

into packages of logically connected "products". However as you will note from the timetable this is only proposed towards the end of the timeframe.

- UHF Television Broadcasting
  As a first comment, while there will be spectrum with suitable technical parameters to allow broadcasting, the actual usage will be under the control of the eventual right holder who may elect to use all or part of the right for other purposes.

It is obviously possible to select a band, say 500 to 800 MHz, specify external interference limits, (that is out-of-band emission power limits) and allocate the band and therefore the further management process to a person or organisation other than the Crown. This minimises Crown involvement and places maximum responsibility on the other party. It has the disadvantage of requiring some form of "broker" to be established, raising competition policy aspects and is probably a poor choice with which to introduce the new regime. It may well be far more attractive as the management regime matures with experience.

The NERA report proposed a slightly different solution with the creation of six sub bands or blocks, which would then be allocated. This requires some choices of block size (NERA interestingly proposed 56 MHz, presumably so to allow either a multiple of 7 MHz or 8 MHz channel allocation to be utilised). Disadvantages of the block approach include the present reality that a single geographic area cannot utilise two adjacent channels from the same block (certainly not for comparable services), thereby requiring "re-contracting" (with its inherent cost) to allow half of the spectrum to be used.

A further step that is possible is for the spectrum design to contain individual channels, but still on a nationwide basis. This requires effective adoption (continuation) of a channel width and a minimal modulation format (insofar as adjacent channel energy from, for example, the vestigal sideband is concerned). The actual channels can be grouped in some manner, or allocated individually. If they are grouped there are also inherent interference mechanism which should be "built out" rather than "built in" to the allocation of any specific channel groupings. One such example is the 5 channel local oscillator relationship. Assumptions on intermediate frequencies are inherent in this mechanism. More centralised decision making and reduced, but not necessarily significantly reduced, freedoms result. Note there has been no geographic subdivision at this stage.

However, it may well be that potential users seek a more specific spectrum right including a geographic subdivision. One possible subdivision is given on the accompanying diagram. However, in reality a far more complex geographic allocation may be needed. This would include inherent decisions on whether to give an even distribution or to estimate a major market/nationwide balance. If geographic distribution proves to be the optimum arrangement, some form of reference system will be necessary for each geographic area. There will need to be a greater "a priori" consideration of potential interference mechanisms.

The interference mechanism must, to be soundly based, evaluate transmitter performance, receiver performance particularly those used the general public, and other factors. The co-siting of broadcasting services together, with or without other telecommunications services could also be considered. The scope for making restrictions on the new spectrum right holder increases as you get further into the geographic and frequency subdivision process. However such restrictions may not necessarily prove significant to the right holder.

It is not possible to be definitive about exactly where in the above graduation the end result will be. Expressions of interest are an important factor and these will need to be put in hand in the near future. What is clear, however, is that there are trade offs between the market requirements, transaction costs (ie the costs of subdivision or resubdivision), degrees of freedom obtained, and the overall technical and economic efficiency achieved. These trade offs will occur at each level of operation of the system (ie at Crown, right holder and licensee level).

All of the discussion assumes vacant spectrum, and indeed is still valid if we were prepared to accept potential disruption of existing users on a wholesale basis. Such, however, is not the case. Wherever practicable, spectrum with existing incumbent licensees will be designed to reflect the existing users.

ALLOCATION

The allocation process, while perhaps conceptually simple is in reality a whole science in itself. The criteria used to design the process are essentially to have an open entry process, to induce rational behaviour, to ensure genuine bids are received, and to quickly achieve a result.

Government has now a significant body of experience in the tendering of resources and this will be drawn upon as necessary.

The process will be notified to registered parties and also publicly, facilitating any person to bid. At this stage the particular spectrum design is known and clear "property" descriptions are available on which bids must be based.

There will be a requirement for a deposit (bank cheque) or similar, probably for some 10-20% of the actual bid, to accompany the lodgement of a bid. The deposits of unsuccessful tenders will of course be returned promptly once a tender is determined.

Once bids are opened and scheduled, there will be a consideration of any incumbency rights. These occur when a tendered right substantially corresponds to an existing licence. Where this is the case, the incumbent licensee will be offered the opportunity to match the highest bid. This will necessarily be a quick process with a "cheque by return" process being expected.

If an incumbent elects not to use his pre-emptive right, the spectrum right is simply allocated to the highest bidder, but at the second highest price.

COSTS

The cost area is one where some concern has been raised and it is appropriate to therefore clearly outline the various costs foreseen. Firstly, some definitions:

- Administrative charges:
  These are the costs incurred by the Crown in performing its functions under the relevant legislation. At present they can be considered to equate to the licence fees charged under the Regulations, although some categories have an adjustment process to be fully "cost of service" based.

- Allocative premium:
  This is the premium for allocation under the competitive tender system.

- Resource rental:
  This is a regular payment which would, under defined conditions, equate to the allocative premium over the allocation period.

Now, as to the application of the costs:

- Administrative charges will continue to be applicable to ensure that, as occurs today, Government costs are covered. When the spectrum right holders are taking responsibility for their own spectrum, insofar as enforcement and interference are concerned, the Government costs are expected to fall, and thus the administrative charges will be able to reduce.

- Allocative premium costs are self explanatory and are a one off payment for a long term spectrum tenure.

- Resource rentals are likely to apply where one person is paying only administrative charges under the old system and another with directly comparable spectrum has paid an allocative premium. This would, without resource rental, severely "tilt" the playing field. It would be the intention to minimise any situations where resource rentals would be necessary, but there will inevitably be some occasions where they will arise.

USE OF RIGHTS

Let us assume that we have now been through the overall consultations, design stages and spectrum rights have been allocated to a person. Further assume there are no existing incumbents. Now how do potential users utilise a right and operate a system?

The information and detail of who has tenure of a right is available from the spectrum registry function. This is a publicly available record (but possibly at a cost) which is in fact the legal basis of tenure. In other words if you are "on the register" you are the titleholder, and the registry will therefore be a legally orientated process.

When a right holder determines how his spectrum will be actually utilised, he will need to record the use details, in the prescribed format, and cause this use to be recorded against the title. This will be required if it is his own use, or it is a use he proposes to permit another person to undertake. This requirement for recording will satisfy the 'publicly available information' criteria which is an important part of the overall regime.

However, just as present licences are accompanied by an expectation that the system is practicable and is considered compatible with existing spectrum use, there will be some requirement on the title owner to ensure that uses which are recorded against a title are indeed practicable and that existing spectrum use has been taken into account. At this stage a certification process by an appropriately qualified person is envisaged. It is interesting to note that this requirement would apply even if the Crown is the title holder and is proposing to "licence" an additional user in some form.

This covers the broad implementation aspects of the regime and I would propose to now invite any discussion or questions that you have on the topic, or any related subject.

Thank you for your attention.

Office of the
MINISTER OF BROADCASTING
Wellington New Zealand

PRESS RELEASE

EMBARGOED UNTIL 1.35 PM FRIDAY 17 MARCH 1989

RADIO FREQUENCIES FOR NON-COMMERCIAL BROADCASTERS

In a speech delivered in Auckland today, the Minister of Broadcasting, Hon Jonathan Hunt said that the Government had decided as an integral part of its broadcasting policy to continue to facilitate non-commercial broadcasting uses of radio spectrum.

The Government has made provision for non-commercial broadcasters, such as, for example, the National Radio and Concert Programme networks, access radio, student radio where it serves a student audience and certain Maori services to acquire radio spectrum in a variety of ways in the new spectrum management system, under which radio frequencies will be allocated by tendering. These include the following options

- Non-commercial broadcasters will be able to buy spectrum rights outright like commercial broadcasters. In contrast, many are operating on temporary short term broadcasting authorisations at present.

- The new Broadcasting Commission will be able to assist services which it funds to acquire spectrum. If necessary, additional support for spectrum costs will be made available to the Commission, in order to preserve its budgetary position and ensure that its public broadcasting fee revenue is fully available for

its primary goals of supporting local identity and culture, transmission to remote areas and programming for minorities and women. Spectrum costs for most non-commercial radio services are not expected to be large however.

- There will be continuing provision for very short term use of frequencies, such as for use at shows, through the Ministry of Commerce. Modest costs will apply.

In this manner the Government will ensure that priority non-commercial services will continue to have access to frequencies suitable for their needs.

Mr Hunt said, "The Government's broadcasting policies are aimed at providing better broadcasting services for the public. Providing for greater accessibility to frequencies through tendering is an essential part of the policy. We will, however, be ensuring that broadcasting services which meet wider policy objectives continue to be provided."

Office of the
MINISTER OF BROADCASTING
Wellington New Zealand

PRESS RELEASE

EMBARGOED UNTIL 1.35 PM FRIDAY 17 MARCH 1989

TRANSITIONAL ARRANGEMENTS FOR OBTAINING BROADCASTING RADIO FREQUENCIES

The Minister of Broadcasting, Hon Jonathan Hunt today announced that the Government had decided to make special arrangements for the allocation of radio frequencies during the transition to the spectrum management system to be introduced this year. Under the new spectrum management system frequencies for both television and radio broadcasting will be allocated by competitive commercial tender, rather than on the decision of the Broadcasting Tribunal.

The Broadcasting Bill currently under study by the Planning and Development Select Committee provides for the abolition of the Broadcasting Tribunal. Meanwhile, the Tribunal still faces a backlog of applications, including for example FM sound radio frequencies in Auckland, the Bay of Plenty, Dunedin and Queenstown, as well as frequencies for Maori Radio stations.

Mr Hunt said: "To ensure there is a smooth transition to the new spectrum management system, the Government has decided that the Broadcasting Tribunal will continue to determine broadcast warrant applications until the provisions of the new spectrum management legislation come into effect. That date is currently anticipated to be 1 July 1989.

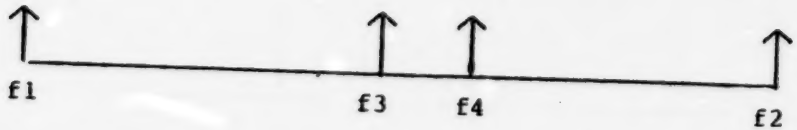
I will shortly be issuing a notice of Government policy to the Broadcasting Tribunal under section 68 of the Broadcasting Act 1976, to ensure that priority is given to applications which the Tribunal has already commenced processing rather than to new applications. Frequencies for new broadcasting proposals will be able to be adequately provided through the tendering mechanisms to be introduced. The Government will also be promoting an amendment to the Broadcasting Bill to ensure that under its transitional provisions, the Tribunal is able to complete determination of certain long standing sound radio warrant applications already heard."

Mr Hunt said that these measures should provide for a greater degree of certainty for those who have been seeking warrants, as well as facilitating the work of the Tribunal.

FIGURE A

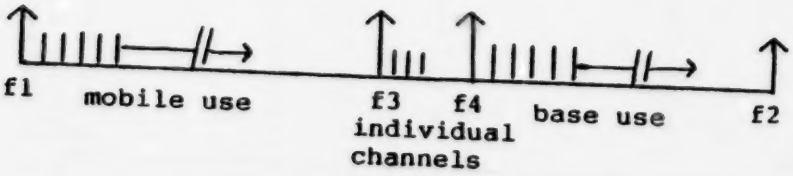
Band Edge constraints only

FIGURE B



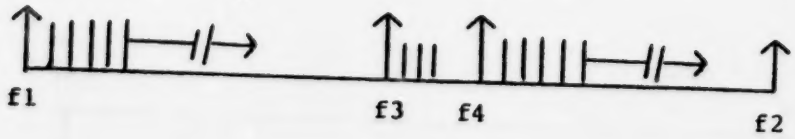
Subdivision into section for single frequency and two frequency use

FIGURE C



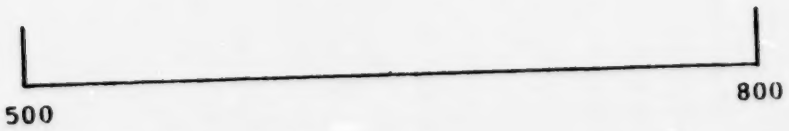
Subdivision into channels

FIGURE D



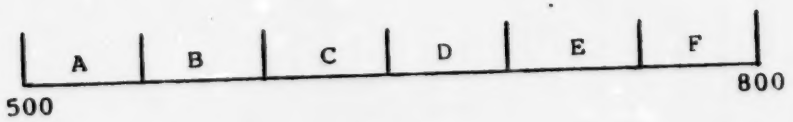
Further geographic subdivision (several methods possible)

FIGURE A



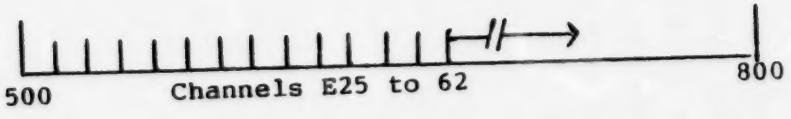
Overall band

FIGURE B



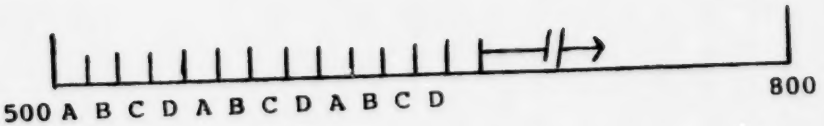
Block sub-bands

FIGURE C



Individual channels

FIGURE D



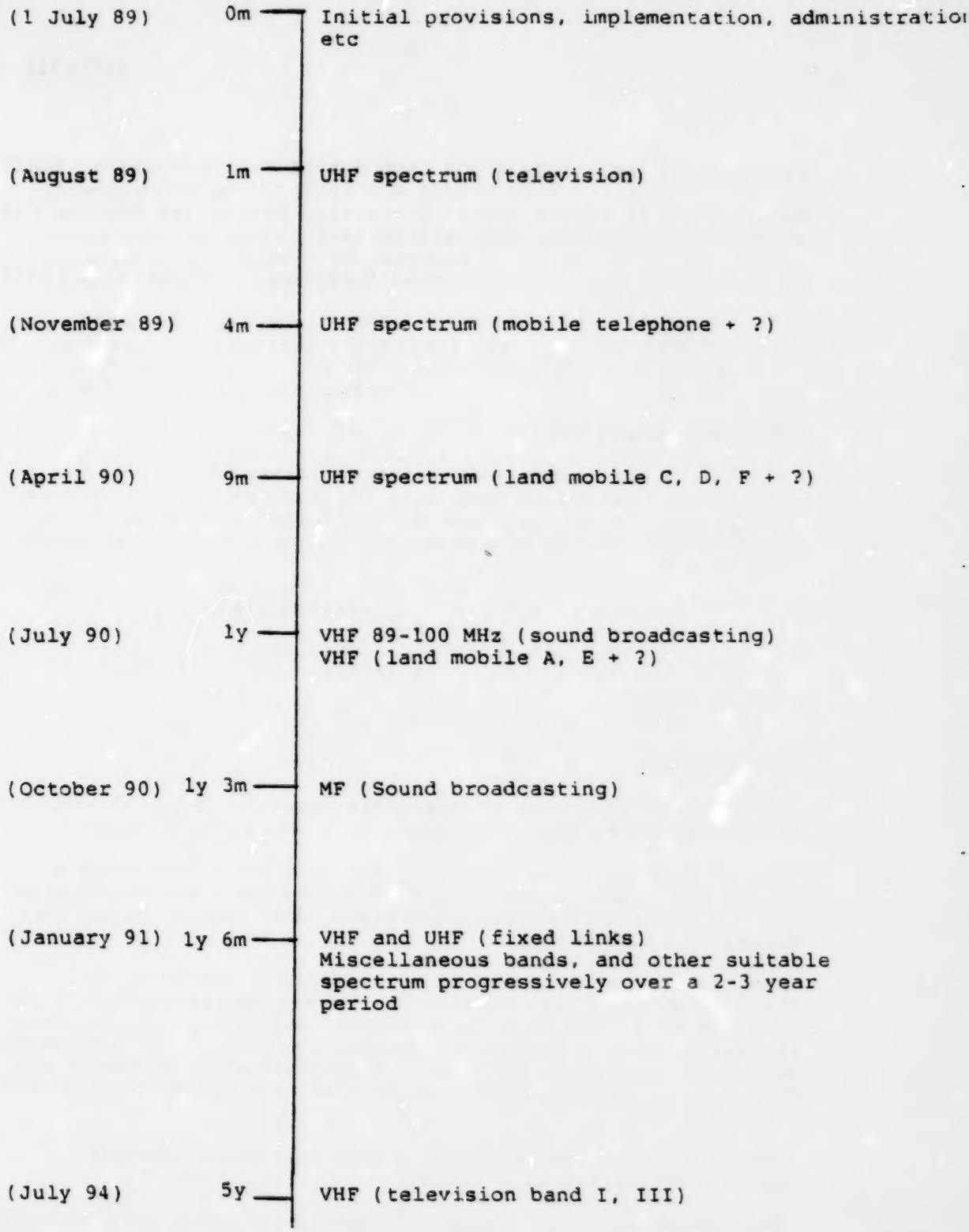
Geographic subdivision
several methods possible

AK	A, C	6 regions
HN	B, D	4 groups
PM	A, C	
WN	B, D	
CH	A, C	
DN	B, D	

SPECTRUM DESIGN

(BROADCAST TELEVISION)

APPENDIX 2



SPECTRUM DEVOLUTION
INDICITIVE TIMETABLE

APPENDIX 3 (Not to scale)

APPENDIX 4

SAMPLE TITLE AND LICENCE FOR LAND MOBILE - DISCUSSION DRAFT

Reference CCIR Report 358-4 "Protection Ratios and Minimum Field Strengths Required In Mobile Services"

RF Protection Ratio	Wanted Emission	Unwanted Emission
8 dB	F3E	F3E
17 dB	A3E	A3E
10 dB	F3E	A3E
12 dB	A3E	F3E

Note: Narrowband F3E

****

Minimum required Field Strengths for Mobiles (vehicle in motion in high noise area) and Base Station based on signal quality grade 3 (Interfering affect annoying) and receiver sensitivity of 0.7uV e.m.f.

Frequency	Required Field Strength	
	Mobile	Base Station
80 MHz	12 dBuV/m	13 dBuV/m
150	13	16
450	18	24

DEFINITIONS:

"Band" means a portion of the radio spectrum lying between two designated frequencies (a lower limit and an upper limit).

"Out-of-Band Emission" means an emission on a frequency or frequencies immediately outside the necessary bandwidth which results from the modulation process, but excluding spurious emissions. (IRR138)

"Spurious Emission" means an emission on a frequency or frequencies which are outside the necessary bandwidth and the level of which may be reduced without affecting the corresponding transmission of information. Spurious emissions include harmonic emissions, parasitic emissions, intermodulation products and frequency conversion products, but exclude out-of-band emissions. (IRR139)

"Unwanted Emissions" consist of spurious emissions and out-of-band emissions. (IRR140)

"Extra-band emission" means an unwanted emission on a frequency or frequencies which are outside the Band.

APPENDIX 4

SAMPLE TITLE AND LICENCE FOR LAND MOBILE - DISCUSSION DRAFT

These figures and definitions form the basis of the attached example of a typical VHF Narrowband FM Land Mobile channel licence granted by a Band Owner.

For the sake of simplicity a flat Extra-band Emission limit has been set. In practice this limit may vary for different frequency bands depending on the nature of the primary usage of that portion of the radio spectrum.

Assume that the basic Record Of Title (of Radio Spectrum Property Rights) contains the following information:

RECORD OF TITLE:	213
OWNER:	Acme Spectrum Investments Ltd
BAND - Lower Frequency:	150.0 MHz
- Upper Frequency:	156.0 MHz
EXTRA-BAND EMISSION LIMIT:	-53 dBW e.i.r.p.

APPENDIX 4

SAMPLE TITLE AND LICENCE FOR LAND MOBILE - DISCUSSION DRAFT

I, John Smith, acting for and on behalf of Acme Spectrum Investments Ltd being the owner of spectrum rights described in record of title number 213 hereby grant to John Brown the rights to transmit in accordance with the particulars specified as follows.

LICENCE NUMBER:	213/6543/A
BAND - LOWER FREQUENCY:	150 MHz
- UPPER FREQUENCY:	156 MHz
TRANSMIT CARRIER FREQUENCY:	152.525 MHz
LOCATION:	Wright Hill NZMS 260 Map Reference N123/456789
DESIGNATION OF EMISSION:	16K0F3EJN
MAXIMUM POWER OF EMISSION:	14dBW eirp
ANTENNA PATTERN NUMBER:	AP547A
ANTENNA POLARISATION:	Vertical
ANTENNA HEIGHT:	300 metres A.S.L.
RECEIVE LOCATION:	Fixed and Mobile stations within the 13 dBuV/m field strength contour on Map CM839 and receiving a minimum field strength of 13 dBuV/m.
RECEIVE PROTECTION RATIO:	10dB required for a minimum received field strength of 13 dBuV/m.

UNWANTED EMISSIONS LIMIT:
Any emission appearing on a frequency removed from the carrier by between 8 and 12kHz inclusive must be attenuated to at least -26dBW eirp.
Any emission appearing on a frequency removed from the carrier by more than 12kHz and up to and including 150 MHz or 156 MHz inclusive must be attenuated to at least -56dBW eirp.

EXTRA-BAND EMISSION LIMIT:
Any emission appearing on a frequency beyond the Band must be attenuated to at least -53dBW eirp.

APPENDIX 4

SAMPLE TITLE AND LICENCE FOR LAND MOBILE - DISCUSSION DRAFT

I, John Smith, acting for and on behalf of Acme Spectrum Investments Ltd being the owner of spectrum rights described in record of title number 213 hereby grant to John Brown the rights to transmit in accordance with the particulars specified as follows.

LICENCE NUMBER:	213/6543/B
BAND - LOWER FREQUENCY:	150 MHz
- UPPER FREQUENCY:	156 MHz
TRANSMIT CARRIER FREQUENCY:	155.500 MHz
TRANSMIT LOCATION:	Fixed and Mobile stations within the 13 dBuV/m field strength contour on Map CM839.
DESIGNATION OF EMISSION:	16K0F3EJN
MAXIMUM POWER OF EMISSION:	14dBW eirp
ANTENNA POLARISATION:	Vertical
RECEIVE LOCATION:	Wright Hill NZMS 260 Map Reference N123/456789.
ANTENNA PATTERN NUMBER:	AP547B
ANTENNA HEIGHT:	300 metres A.S.L.
PROTECTION RATIO:	10dB required for a minimum received field strength of 16 dBuV/m.

UNWANTED EMISSIONS LIMIT:
Any emission appearing on a frequency removed from the carrier by between 8 and 12kHz inclusive must be attenuated to at least -26dBW eirp.
Any emission appearing on a frequency removed from the carrier by more than 12kHz and up to and including 150 MHz or 156 MHz inclusive must be attenuated to at least -56dBW eirp.

EXTRA-BAND EMISSION LIMIT:
Any emission appearing on a frequency beyond the Band must be attenuated to at least -53dBW eirp.

APPENDIX 4

SAMPLE TITLE AND LICENCE FOR FM BROADCAST - DISCUSSION DRAFT

I, John Smith, acting for and on behalf of Acme Spectrum Investments Ltd being the owner of spectrum rights described in record of title number 933 hereby grant to John Brown the rights to transmit in accordance with the particulars specified as follows.

LICENCE NUMBER:	933/7298
BAND - LOWER FREQUENCY:	92 MHz
- UPPER FREQUENCY:	97 MHz
TRANSMIT CARRIER FREQUENCY:	94.1 MHz
LOCATION:	Mt KauKau NZMS 260 Map Reference N124/356789
DESIGNATION OF EMISSION:	256KF8EHF
MAXIMUM POWER OF EMISSION:	47 dBW eirp
ANTENNA PATTERN NUMBER:	AP236
ANTENNA POLARISATION:	Slant
ANTENNA HEIGHT:	300 metres A.S.L.
RECEIVE LOCATION:	Fixed and Mobile stations within the 54 dBuV/m field strength contour on Map CM611 and receiving a minimum field strength of 54 dBuV/m.
RECEIVE PROTECTION RATIO:	45 dB required for a minimum received field strength of 54 dBuV/m.

UNWANTED EMISSIONS LIMIT:
Any emission appearing on a frequency removed from the carrier by between 120 and 240 kHz inclusive must be attenuated to at least 22 dBW eirp.
Any emission appearing on a frequency removed from the carrier by more than 240 kHz and up to and including 92 MHz or 97 MHz inclusive must be attenuated to at least -9 dBW eirp.

EXTRA-BAND EMISSION LIMIT:
Any emission appearing on a frequency beyond the Band must be attenuated to at least -53 dBW eirp.

APPENDIX 4

SAMPLE TITLE AND LICENCE FOR FM BROADCAST - DISCUSSION DRAFT

Reference CCIR Report 412-4 "Planning Standards For FM Sound Broadcasting At VHF"

Minimum Usable Field Strength: 54 dBuV/m

Co-channel Protection Ratio: 45 dB

These figures form the basis of the attached example of a typical VHF Wideband FM Broadcast licence granted by a Band Owner.

Assume the basic Record Of Title (of Radio Spectrum Property Rights) contains the following information:

RECORD OF TITLE:	933
OWNER:	Acme Spectrum Investments Ltd
BAND - Lower Frequency	92.0 MHz
- Upper Frequency	97.0 MHz
EXTRA-BAND EMISSION LIMIT:	-53 dBW

Office of the
MINISTER OF BROADCASTING
Wellington New Zealand

EMBARGOED UNTIL 1.30PM FRIDAY

PRESS RELEASE

APPOINTMENT OF DESIGNATE MEMBERS OF THE BROADCASTING COMMISSION AND THE BROADCASTING STANDARDS AUTHORITY

The Minister of Broadcasting, the Hon Jonathan Hunt, today announced the designate appointments of members of the new Broadcasting Commission and Broadcasting Standards Authority.

They are:

BROADCASTING COMMISSION

Mervyn Norrish of Wellington (Chairman), a very able administrator and recently retired head of the Ministry of External Relations and Trade.

Alan Galbraith of Auckland (Deputy Chairman), a Queen's Counsel who has experience of broadcasting and film industry issues.

Gay Sharlotte of Christchurch, with experience from the BCNZ Board and in tertiary education.

Dr Roger Horrocks of Auckland, with expertise in the film and television disiplines.

Merimeri Penfold of Auckland, who has a broad range of educational and Maori experience.

Stuart Melville of Dunedin, an accountant and businessman.

BROADCASTING STANDARDS AUTHORITY

Iain Gallaway of Dunedin (Chairman - previously announced), a solicitor and a member of the BCNZ Board for a number of years.

APPENDIX 5

Joanne Morris of Wellington, a law lecturer at Victoria University and Chairperson of the recent Ministerial Committee of Inquiry into Pornography.

Jocelyn Fish of Morrinsville, with a wide range of experience in community service, Local Government, the National Council of Women and farming.

Jan Hardie of Christchurch, who will contribute business, family, broadcasting and educational experience.

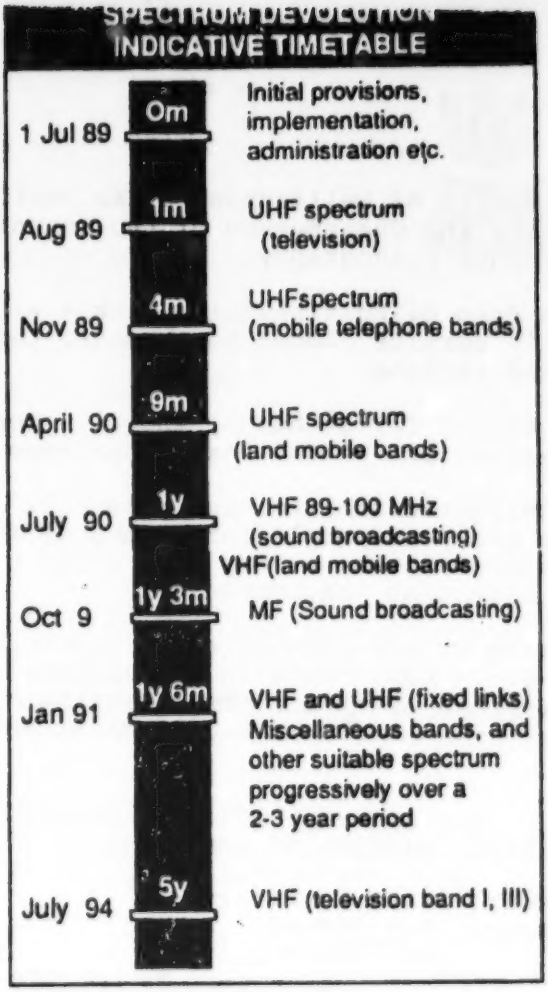
"I am delighted that we have been able to attract such a high calibre group of people for each body. In each case the members have, between them, a very wide range of talents and expertise in issues affecting the community.

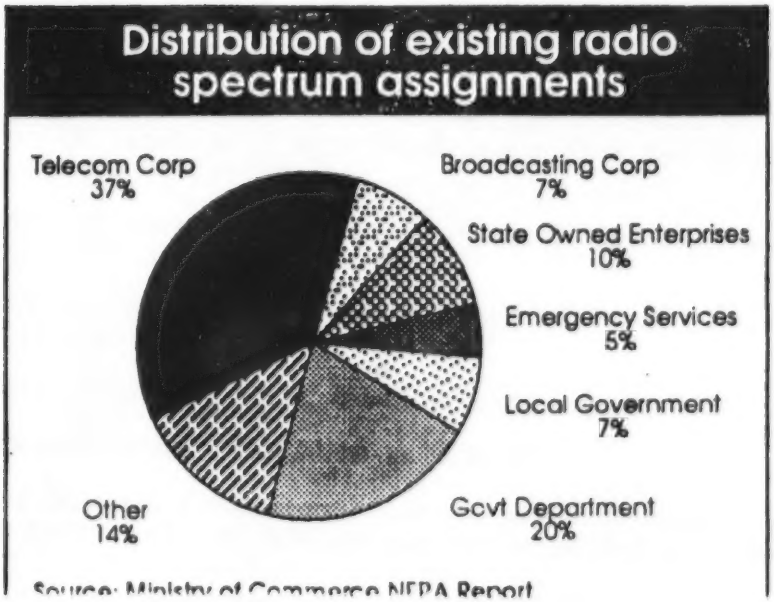
"The tasks we are setting these two bodies will not be easy, but I have every confidence in the members' abilities to play major roles in this new era of broadcasting," concluded Mr Hunt.

<u>For further information contact:</u>

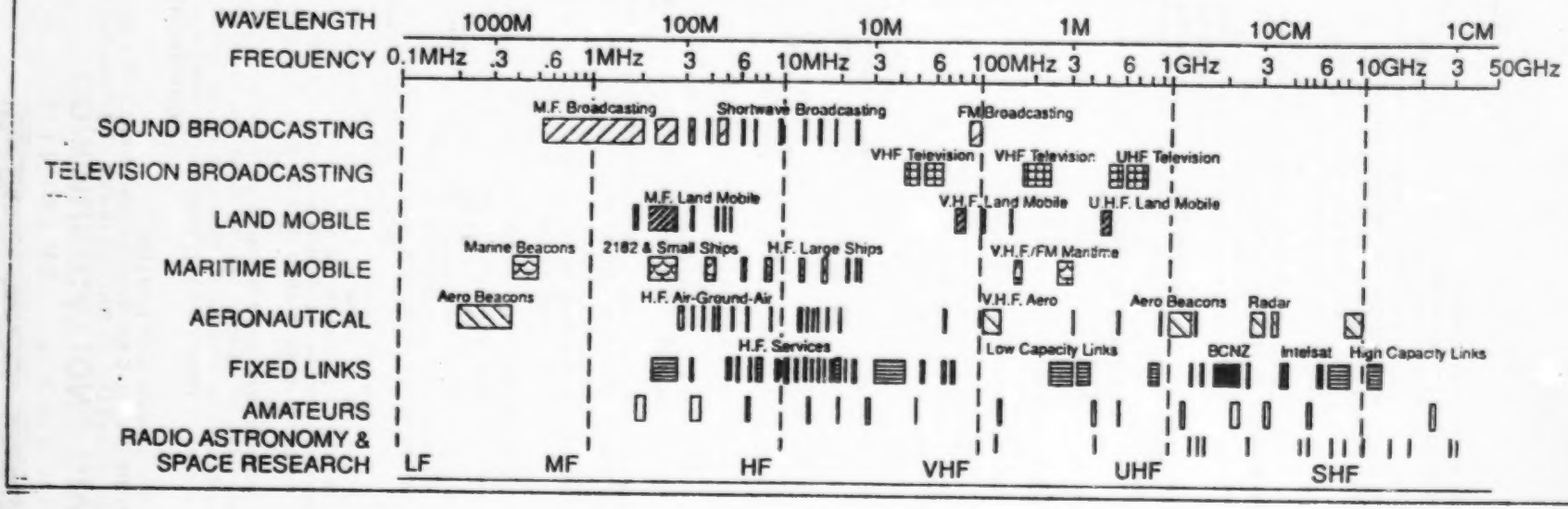
Diane Moir, Press Secretary
Telephones: (04) 719 821
(04) 719 995

APPENDIX 5


SPECTRUM DEVOLUTION
INDICATIVE TIMETABLE
1 Jul 89
0m
Initial provisions, implementation, administration etc.
Aug 89
1m
UHF spectrum (television)
Nov 89
4m
UHFspectrum (mobile telephone bands)
April 90
9m
UHF spectrum (land mobile bands)
July 90
1y
VHF 89-100 MHz (sound broadcasting)
VHF(land mobile bands)
Oct 9
1y 3m
MF (Sound broadcasting)
Jan 91
1y 6m
VHF and UHF (fixed links) Miscellaneous bands, and other suitable spectrum progressively over a 2-3 year period
July 94
5y
VHF (television band I, III)


Distribution of existing radio spectrum assignments
Telecom Corp 37%
Broadcasting Corp 7%
State Owned Enterprises 10%
Emergency Services 5%
Local Government 7%
Govt Department 20%
Other 14%
Source: Ministry of Commerce NERA Report

Radio frequency usage in New Zealand



SOURCE: Ministry of Commerce NERA Report

COMMERCE

MINISTRY OF COMMERCE

COMMUNICATIONS DIVISION

INVITATION FOR EXPRESSIONS OF INTEREST IN RADIO SPECTRUM FOR TELECOMMUNICATIONS AND TELEVISION BROADCASTING WITHIN UHF BANDS

BACKGROUND

The New Zealand Government has announced, as part of its policies on telecommunications and broadcasting, its intention to make provision for new services through a revised regime for the allocation of radio spectrum and to promote changes to existing telecommunications and broadcasting legislation for this purpose.

the Ministry of Commerce, in preparation for the implementation of the Government's policy proposals, is seeking information on the demand for new services to assist in the provisional design and planning of available spectrum for such new uses and subject tot he enactment of legislation by Parliament, the establishment of procedures for the allocations of that spectrum.

PURPOSE OF INVITATION

The purpose of this invitation is to obtain information on the level of interest and demand for radio spectrum in certain Ultra High Frequency (UHF) bands for telecommunications, including television broadcasting, in New Zealand.

RADIO SPECTRUM DESCRIPTION

Under consideration is the range of frequencies between 518 MHz and 806 MHz within New Zealand. The spectrum has usage allocation in the International Radio Regulations as follows:

518 — 585 MHz Fixed, Mobile, Broadcasting
585 — 610 MHz Fixed, Mobile, Broadcasting, Radionavigation
610 — 806 MHz Fixed, Mobile, Broadcasting

Additionally the 610 MHz to 620 MHz range of frequencies is allocated to the Amateur service on a secondary basis. Any future usage will be in accordance with these allocations.

COMMENTS ON INTERNATIONAL USAGE:

The broad frequency range 470 MHz to 862 MHz is commonly referred to as Band IV/V UHF Television Broadcast although in practice the available frequency range for broadcast purposes is somewhat less than that. There are basically two channelling plans used:

(1) The European/African 8 NHz plan for 470 — 862 MHz i.e., Channel 21 (470 — 478 MHz) to Channel 69 (854 — 862 MHz).
(2) The USA 6 MHz plan for 470 — 806 MHz i.e, Channel 14 (470 — 476 MHz) to Channel 69 (800 — 806 MHz).

EXISTING NEW ZEALAND USAGE

In preparing expressions of interest regard should be had to the following existing uses of the spectrum.

590 — 598 MHz: Low power television in the Nelson, Blenheim and Westport areas. (Channel 36 European Plan).
585 — 610 MHz: Radionavigation radar equipment at Auckland, Ohakea, Wellington and Christchurch. With the exception of Ohakea this is expected to be phased out over a two year period.
614 — 622 MHz: Amateur television repeaters in the Wellington and Gisborne areas. (Channel 39 European Plan).
670 — 678 MHz: Low power television usage in the Wellington area. (Channel 46 European Plan).
702 — 710 MHz: Low power television usage in the Wellington and Christchurch areas. (Channel 50 European Plan).

FORMAT OF EXPRESSIONS OF INTEREST

Expressions of interest may be made in any format desired. However, as much as possible of the following information should be included:

(1) Name of person or organisation
(2) Postal Address
(3) Business telephone contact number
(4) Contact person for technical matters
(5) General description of the type of service to be provided
(6) Geographical extent of coverage(s) desired
(7) Transmitter locations
(8) Preferred form of spectrum allocation:
    — Specific channels for each site
    — Nationwide allocation of one or more specific channels
    — Nationwide allocation of a sub band (i.e., block) of channels
(9) Where Television Broadcasting is intended:
    — Linking (other than off-air) requirements
    — Auxilary services requirements (e.g., OB, STL etc)
    — Auxiliary transmissions requirements (e.g., Dual Language, Stereo Sound, Teletext etc).

CONFIDENTIALITY